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X 1969 REPORT OF

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EGG PRODUCTION TESTS
UNITED STATES AND CANADA X

• RANDOM SAMPLE EGG PRODUCTION TESTS

TWO-YEAR COMBINED SUMMARY, 1967-68 AND 1968-69
PROCEDURES FOR COMPUTING COMBINED SUMMARY
RANGE GROUP RANKINGS, 1968-69
SUPERVISORS, ENTRANTS, AND MANAGEMENT, 1968-69

Egg production tests are designed to provide poultrymen, hatcherymen, and breeders with a reliable guide to the performance of poultry stocks offered for sale. This publication contains information on many egg production traits that are of economic importance to the trade. The data were compiled from the records of official Random Sample Egg Production Tests conducted in the United States and Canada. The data resulting from these tests have been analyzed statistically by Biometrical Services Staff of USDA's Agricultural Research Service, Beltsville, Md.

The publication of this report is based on recommendations of the National Committee on Random Sample Poultry Testing and those of the Council of American Official Poultry Tests. Information in this report was compiled by the Poultry Research Branch, Animal Husbandry Research Division, Agricultural Research Service from data furnished by Test Supervisors.

The publication of this report does not imply approval or endorsement by the U.S. Department of Agriculture of any of the stocks mentioned.

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This report is divided into four sections:

1. A 2-year combined summary of the data obtained in the 1967-68 and 1968-69 Random Sample Egg Production Tests. These data were treated by acceptable statistical procedures that allow the reader to compare directly the stock entered in the various egg production tests in the United States and Canada.
2. An explanation of statistical procedures that were used in computing the regressed means and confidence limits of egg production traits evaluated in the 2-year combined summary.
3. A range group ranking for stock that was entered in 1968-69 Random Sample Egg Production Tests. The ranking shows the performance of each stock by traits compared with that of other stock in the same test.
4. List of stocks entered in 1968-69 tests and some of the management conditions at the tests during the 1968-69 test year.

TWO-YEAR COMBINED SUMMARY FOR TEST YEARS 1967-68 and 1968-69

Entries in the various tests start with a random sample of hatching eggs or chicks of the stock to be tested. Samples are drawn according to prescribed methods to ensure that each entry is typical of the stock it represents. All entries within a test are treated alike with respect to housing, feeding, management, and disease control in order to avoid differences in performance that would be due to environment.

All tests are conducted according to these basic principles. However, even the most carefully designed and conducted tests are influenced by errors of two kinds. The first kind of error is the chance deviation or unavoidable "sampling error" made when a small sample of eggs or chicks represents an entry. The other kind of error is due to uncontrolled or unknown environmental differences between entries that occur in spite of all efforts to treat all entries within a given test as nearly alike as possible. The differences between the results for two entries in a single test for a single year may be due to these chance variations rather than to a real difference in the performance capabilities of the two stocks. The effect of such errors in comparing stocks can be materially reduced by basing comparisons on the combined results of several tests over 2 or more years. If all entries compared were entered in the same tests in both years, the simple averages could be compared directly without adjustment.

However, differences among tests and between years and those caused by climatic conditions and other environmental factors affect the results. As a consequence, a direct comparison of the test results of two stocks in different tests or in different years, may be misleading. Therefore, to present test results in a manner that will allow sound evaluation of all stocks tested, the results were combined, by stocks and by years, and were adjusted by accepted statistical procedures for test and year differences and for variation in amount of information per stock. The results of these computations are published as the "regressed mean" for each trait for each stock that was tested (table 1).

The performance data (regressed means) reported in this summary are derived from the results reported by the individual tests for each of the past 2 years. It is unlikely, however, that the means for any stock, even though entered in only 1 test each year, will coincide precisely with the 2-year average performance data as published by the test. The variations are due to adjustments for test differences, year difference, the number of tests and of years entered, and the number of replicates per test. These statistical adjustments allow predictions of what the average performance would have been for each stock had all stocks been entered in all tests each year.

The statistical treatment applied to the test data is designed to reduce the influence of nongenetic variations. This cannot be accomplished perfectly, and consequently, estimates or predictions of performance cannot be made with absolute precision. However, reliable predictions, within prescribed limitations, can be made as to whether a difference in the reported performance of two stocks represents a real difference in their performance. These predictions involve the use of the confidence limit values that have been computed for each trait or performance factor reported.

A brief explanation of the statistical procedures used in computing the regressed means, confidence limits, and performance index is provided in the section entitled "Procedures Used for Computing Combined Summary Values."

The following example illustrates the compilation of the 2-year combined summary. This and the related explanation will help the reader to use and interpret the data in table 1.

(Illustration of regressed means and 80-percent confidence limits as they might appear for a few traits)

STOCK CODE	BODY WEIGHT (pounds)		FEED PER POUND OF EGGS PRODUCED (pounds)		EGG WEIGHT (oz./doz.)		LARGE AND EXTRA LARGE EGGS (percent)		ALBUMEN QUALITY (Haugh units)		BLOOD SPOTS			
	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	1/8 INCH OR MORE (percent)		LESS THAN 1/8 INCH (percent)	
											RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS
995		5.4		2.95		25.7		75.2		77.1		0.9		2.2
	5.6	5.8	3.02	3.09	26.0	26.3	77.5	79.8	77.9	78.7	1.1	1.4	2.7	3.2
996		4.0		2.77		25.0		69.0		80.1		0.6		0.8
	4.2	4.4	2.83	2.89	25.2	25.4	71.0	72.8	80.9	81.7	0.7	1.0	1.1	1.4
997		4.5		2.86		24.6		65.5		73.3		1.0		1.5
	4.7	4.9	2.94	3.02	24.9	25.2	68.0	70.3	74.1	74.9	1.2	1.4	1.9	2.4
998		3.7		2.73		24.9		69.2		75.5		0.9		1.2
	4.0	4.3	2.84	2.95	25.3	25.7	72.4	75.6	76.6	77.7	1.0	1.2	1.5	1.9
999		3.9		2.47		25.0		67.6		82.3		0.6		0.7
	4.2	4.5	2.56	2.65	25.4	25.8	70.3	73.0	83.0	83.7	0.8	1.0	1.1	1.4

*If the confidence limits for two regressed means overlap, the two means are not significantly different at the 5% level.

The range of the confidence limits represents the amount of difference in the performance of two stocks that may be due to chance. If the confidence limits for two regressed means overlap, the two means are not significantly different at the 5-percent level of probability. If the confidence limits for two regressed means do not overlap, the odds are at least 19 in 20 that a real difference exists in the performance of the two stocks.

The use of the above data as a means of evaluating different stocks and traits can be illustrated as follows:

For the trait "Body Weight," the confidence limits of Stock 995 (5.4 to 5.8 lbs.) do not overlap the confidence limits of any of the other stocks. Therefore, Stock 995 has a significantly higher body weight than the others. However, the confidence limits of Stock 996 (4.0 to 4.4 lbs.) overlap the confidence limits of Stocks 998 (3.7 to 4.3 lbs.) and Stock 999 (3.9 to 4.5 lbs.). The body weights of these three stocks are, therefore, not significantly different.

Using the trait "Feed per Pound of Eggs Produced" as another example, the confidence limits of Stock 995 (2.95 to 3.09 lbs.), Stock 997 (2.86 to 3.02 lbs.), and Stock 998 (2.73 to 2.95 lbs.) all overlap each other. Thus there is no significant difference in the feed conversion of these three stocks. When comparing the feed conversion of Stock 999 (2.56 lbs.) with that of the other stocks, we see that the range of its confidence limits is from 2.47 to 2.65 lbs. Since this range does not overlap the confidence limits of the other four stocks, Stock 999 has a significantly lower feed conversion than the other stocks listed.

Another example can be shown by using the trait "Albumen Quality." The confidence limits of Stock 995 (77.1 to 78.7) overlap the confidence limits of Stock 998 (75.5 to 77.7). Therefore, there is no significant difference in the albumen quality of these two stocks, even though the regressed mean of Stock 995 is 77.9 Haugh Units and Stock 998 is 76.6 Haugh Units. When Stock 995 is compared with Stocks 996 and 999, we see that the confidence limits of these two stocks do not overlap those of Stock 995. Thus, these two stocks have a significantly higher albumen quality (80.9 and 83.0 Haugh Units, respectively) than the 77.9 Haugh Units of Stock 995. In comparing Stock 995 with Stock 997, the confidence limits do not overlap. In this case, the albumen quality of Stock 997, expressed as a regressed mean of 74.1 Haugh Units is significantly lower than the regressed mean of Stock 995.

The range of the confidence limits will not necessarily be the same for two different stocks that have the same regressed mean. The number of locations in which a stock is entered, the number of replicate pens per location, the number of years entered, and the accuracy involved in adjusting for location and year effects all have a bearing on the range of the confidence limits for each individual regressed mean.

Explanation of Income Figures

The "Income Over Feed and Chick Cost" figures reported in table 1 represent the sales value of the eggs produced and of the hens at the end of the test minus the cost of the chicks and the feed used during the growing and laying periods. These figures may be useful in comparing the overall performance of stocks, but they should not be considered as predictions of "profit" to be obtained under commercial operations. The "income" figures should be reduced by other costs, such as labor, building and equipment depreciation, vaccination, litter, interest, taxes, and insurance, to approximate profits that might be expected under commercial conditions. Surveys conducted among commercial producers indicate that such other costs may range from \$1 to \$2 per pullet housed.

Although the average chick price is reported for each stock, this value cannot be appropriately used to convert the "Income Over Feed and Chick Cost" figure to an income over feed cost figure. The average chick price shown is a simple unadjusted average of the prices reported by the entrant for his entries in the various tests and is not directly comparable to chick cost included in "Income Over Feed and Chick Cost."

Stocks Should be Compared for All traits

All traits should be considered when using this report to evaluate the overall performance of the various stocks. The values reported for "Income Over Feed and Chick Cost" represent a composite of several traits, combined as determined by the economic conditions of the areas in which the tests are located. The conditions under which the stock is expected to perform in commercial production may differ from those prevailing at the tests, and such differences should be taken into consideration. For example, a poultryman whose local market pays unusually good premiums for large and extra large eggs should place more emphasis on egg size in his evaluation of stock than poultrymen located in areas where such premiums are not available. The local market preference for brown or white shells should also be taken into account. Traits related to interior egg quality that affect the grade are of greatest importance in areas where prices are based on quality standards.

Each person should study his local needs and conditions and then place appropriate emphasis on the performance traits that are of greatest importance to his situation. A productive and profitable stock for one poultryman under one set of conditions may not fit the needs of another poultryman under a different set of conditions

Definitions of Terms Used and Abbreviations

Stock: A term used to identify a specific breeding combination of chickens. These breeding combinations may include pure strains, strain crosses, breed crosses, incrossbreds, or combinations thereof. Kinds of stock and breeding methods are---

Aust.	Australorp	RIW	Rhode Island White	BX	Crossbred
BPR	Barred Plymouth Rock	Syn.	Synthetic	IN	Incross
CG	California Gray	WL	White Leghorn	INX	Incrossbred
NH	New Hampshire	WPR	White Plymouth Rock	PS	Pure Strain
RIR	Rhode Island Red			SX	Strain Cross

Tests:	Arizona (Ariz.)	New Brunswick (N. B.)
	British Columbia (B. C.)	New Hampshire (N. H.)
	Central Canada (C. C.)	New Jersey (N. J.)
	Florida (Fla.)	North Carolina (N. C.)
	Minnesota (Minn.)	Pennsylvania (Pa.)
	Missouri Cage (Mo.-C.)	Tennessee (Tenn.)
	Missouri Floor (Mo.-F.)	Texas (Texas)

Test Year: A period beginning during the first year stated in a double-year designation and ending approximately 500 days later. See management summary shown in table 7.

Definition of Traits

Growing mortality	Percentage of birds that died on or before the time they were 150 days old or subsequent age at housing.																												
Laying mortality	Percentage of birds that died after they were 150 days old or subsequent age at housing.																												
Age at 50 percent production.	Days of age computed from the first day of the first 2 consecutive days of 50 percent production for living birds in the entry at that time.																												
Hen-housed egg production.	Number of eggs laid per pullet housed computed from time of housing to the end of the test.																												
Hen-day egg production (to end of test).	Percent hen-day production from the time birds reached 50 percent production to end of test.																												
Hen-day egg production (last 30 to 60 days).	Percent hen-day production during the last 30 to 60 days of the test. Length of time involved varies according to the record keeping system of each individual test.																												
Feed per pound of eggs.	Pounds of feed per pound of eggs produced, computed from bulk weighing of the eggs at least 1 day every 2 weeks or 2 days a month at equal intervals during the laying period of the test.																												
Egg weight	The weight of a dozen eggs computed from bulk weighing of the eggs at least 1 day every 2 weeks or 2 days a month during the laying period of the test.																												
Large and extra large eggs.	Percentage of large and extra large eggs as determined by egg-size distribution computed from all eggs laid 1 day each week.																												
Albumen quality	Haugh units, computed from egg weight and albumen height of broken-out egg measured on 1 day's eggs per quarter, at equal intervals. The greater the Haugh units the higher the albumen quality.																												
Large blood spots	Percentage of eggs with one or more large blood spots (1/8 inch or more in diameter), computed from at least 3 days' eggs per quarter, broken-out basis.																												
Small blood spots	Percentage of eggs with one or more small blood spots (less than 1/8 inch in diameter), computed from at least 3 days' eggs per quarter, broken-out basis.																												
Large meat spots	Percentage of eggs with one or more colored large meat spots (1/8 inch or more in diameter), computed from at least 3 days' eggs per quarter, broken-out basis.																												
Small meat spots	Percentage of eggs with one or more colored small meat spots (less than 1/8 inch in diameter), computed from at least 3 days' egg per quarter, broken-out basis.																												
Specific gravity Score.	Eggs are given the specific gravity score that corresponds with the specific gravity of the solution in which they will float. Eggs that do not float in 1.100 solution are given a nine score. The specific gravity of an egg is closely correlated with shell thickness; therefore, the higher the specific gravity score, the thicker the shell. Tabulation of specific gravity solutions and the corresponding specific gravity scores follow:																												
	<table><tr><th colspan="2">Specific gravity</th><th colspan="2">Specific gravity</th></tr><tr><th>Solution</th><th>Score</th><th>Solution</th><th>Score</th></tr><tr><td>1.068</td><td>0</td><td>1.088</td><td>5</td></tr><tr><td>1.072</td><td>1</td><td>1.092</td><td>6</td></tr><tr><td>1.076</td><td>2</td><td>1.096</td><td>7</td></tr><tr><td>1.080</td><td>3</td><td>1.100</td><td>8</td></tr><tr><td>1.084</td><td>4</td><td></td><td></td></tr></table>	Specific gravity		Specific gravity		Solution	Score	Solution	Score	1.068	0	1.088	5	1.072	1	1.092	6	1.076	2	1.096	7	1.080	3	1.100	8	1.084	4		
Specific gravity		Specific gravity																											
Solution	Score	Solution	Score																										
1.068	0	1.088	5																										
1.072	1	1.092	6																										
1.076	2	1.096	7																										
1.080	3	1.100	8																										
1.084	4																												
Body weight	Average weight of birds alive at end of test.																												
Income over feed and chick cost.	Income over feed and chick cost per pullet housed, with chick cost in 1,000 lots at hatch date adjusted for mortality (accidental deaths, sexing errors, and missing chicks not included).																												

California Official Random Sample Egg Laying Test

Emery A. Johnson, Route 3, 2718 No. 99 Highway, Modesto, Calif. 95350

Central Canada Random Sample Egg Production Test

M. S. Mitchell, Poultry Production Section, Canada Department of Agriculture, Ottawa, Ontario, Canada

Florida National Egg Laying Test

R. B. Christmas, Chipley, Fla. 32428

Minnesota Random Sample Egg Production Test

Robert E. Moehrle, Department of Agriculture, Division of Poultry Industries, 430 State Office Building, St. Paul, Minn. 55101

Missouri Random Sample Egg Production Test (Cage)

Charles W. McElyea, P. O. Box 530, Mountain Grove, Mo. 65711

Missouri Random Sample Egg Production Test (Floor)

Charles W. McElyea, P. O. Box 530, Mountain Grove, Mo. 65711

New Hampshire Multiple Unit Egg Production Test

W. C. Skoglund, Department of Poultry Science, University of New Hampshire, Durham, N. H. 03824

New Jersey Random Sample Egg Laying Test

John J. Dowling, Jr., Rutgers University, New Brunswick, N. J. 08903

North Carolina Random Sample Egg Laying Test, Salisbury

G. A. Martin, Poultry Extension Department, North Carolina State University, Raleigh, N. C. 27607

Pennsylvania Random Sample Laying Test

Paul J. Turek, Pennsylvania Furance, Pa. 16865

Tennessee Random Sample Laying Test

O. E. Goff, Poultry Department, University of Tennessee, Knoxville, Tenn. 37916

Texas Genetic Environment Performance Testing Program

Bill H. Doran, Texas A & M University, College Station, Tex. 77843

Table 1.--Two-year combined summary: Regressed means and 80% confidence limits for traits by stocks entered

STOCK CODE	BREEDER'S NAME AND ADDRESS	STOCK		NO. PENS	AVG. CHICK PRICE (Cents)	MORTALITY				AGE AT 50% PRODUCTION (days)				EGG PRODUCTION				HEN-OAY (LAST 30 - 60 DAYS) (percent)	
		BREEDING	STRAIN OR TRADENAME			GROWING (percent)		LAYING (percent)		AGE AT 50% PRODUCTION (days)		HEN HOUSED (number)		HEN-DAY (percent)					
						RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS				
570	Animal Research Institute Ottawa, Ontario, Canada	WL PS	Kentville R. B. C. ---	16 6	40.0	4.7 5.5	4.7 6.3	12.7 14.1	15.5	172 175	178	200 206	62.5 64.0	65.5	50.2 52.9	55.6			
10	Anthony, Geo. M. & Sons Strasstown, Pa. 19559	WL SX	Anthony-----	34 10	37.5	4.7 5.5	4.7 6.3	14.2 15.6	17.0	174 177	180	202 209	65.7 67.3	68.9	53.1 55.2	57.3			
307	Babcock Poultry Farm, Inc. Ithaca, N. Y. 14851	WL SX	Babcock B-300-----	97 28	36.3	6.2 5.5	7.0	14.3 15.7	12.9	166 163	169	229 224	72.2 71.1	73.3	61.5 60.1	62.9			
405	Babcock Poultry Farm, Inc. Ithaca, N. Y. 14851	WL SX	Babcock B-305-----	15 8	36.0	5.8 5.0	6.6	14.4 15.7	13.2	167 163	171	223 216	72.0 70.2	73.8	61.5 59.3	63.7			
377	Babcock Poultry Farm, Inc. Ithaca, N. Y. 14851	RIRxBPR BX	Babcock B-390-----	16 7	36.0	5.1 4.4	5.9	14.3 15.7	12.9	175 172	178	205 199	64.2 62.7	65.7	52.9 50.3	55.5			
230	Brender's Leghorns Ferndale, N. Y. 12734	WL SX	Money Maker-----	12 4	32.0	5.8 5.0	6.6	14.6 15.9	13.3	179 176	182	203 196	63.8 62.0	65.6	52.9 50.1	55.7			
361	Burling Hatchery Oxford, Pa. 19363	RIRxWPR	Golden Tri Cross---	3 1	30.0	6.3 5.7	7.0	15.4 16.4	14.5	174 170	178	209 202	66.3 64.1	68.5	53.7 50.8	56.6			
283	Cameron Leghorn Res. Farm Beaver Springs, Pa. 17812	WL SX	Cameron #924-----	9 4	32.0	6.0 5.3	6.8	14.5 15.7	13.3	176 172	180	215 208	68.7 66.7	70.7	57.6 54.7	60.5			
397	Carey Farms Marion, Ohio 43305	CGxWL BX	Carey New Spots----	13 6	32.0	6.7 5.9	7.6	15.6 16.9	14.3	176 173	179	210 203	67.9 66.2	69.6	57.2 54.6	59.8			
372	Carey Farms Marion, Ohio 43305	WL IN	Carey's New Nick---	6 2	32.0	5.4 4.9	6.1	14.9 15.7	14.0	173 168	178	215 209	69.9 67.7	72.1	59.9 57.1	62.7			
304	Cashman Leghorn Farms Webster, Ky. 40176	SynxWL INX	Cashman Astronauts	16 2	28.5	5.7 5.0	6.5	14.8 13.8	15.8	177 173	181	210 204	67.7 65.5	69.9	---	---			
31	Cashman Leghorn Farms Webster, Ky. 40176	WL IN	Cashman Hi-Cash--	66 17	31.9	5.8 5.1	6.6	15.6 17.1	14.1	178 175	181	211 205	69.3 68.0	70.6	60.3 58.8	61.8			
289	Colonial Poultry Farms Pleasant Hill, Mo. 64080	WL IN	True-Line 365-B---	40 13	33.6	5.7 5.0	6.5	15.6 17.1	14.2	168 164	172	216 210	68.7 67.3	70.1	56.7 54.3	59.1			
392	Colonial Poultry Farms Pleasant Hill, Mo. 64080	---	True-Line 365-H---	20 8	31.0	6.1 5.3	6.9	15.6 17.0	14.3	171 167	175	208 202	67.7 66.0	69.4	56.7 52.1	57.3			
309	Davis, Joe K., Hatchery Earl, N. C. 28038	RIRxBPR BX	Davis Combiner----	26 7	34.0	4.5 3.8	5.2	12.3 13.6	11.0	176 173	179	208 202	63.3 61.9	64.7	51.4 49.0	53.8			

STOCK CODE	FEED PER POUND OF EGGS PRODUCED (pounds)		EGG WEIGHT (oz./doz.)		LARGE AND EXTRA LARGE EGGS (percent)		ALBUMEN QUALITY (Haugh units)		BLOOD SPOTS				MEAT SPOTS				SPECIFIC GRAVITY SCORE		BODY WEIGHT (pounds)		INCOME OVER FEED AND CHICK COST (dollars)	
	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	1/8 INCH OR MORE (percent)		LESS THAN 1/8 INCH (percent)		1/8 INCH OR MORE (percent)		LESS THAN 1/8 INCH (percent)		RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS		
									RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS						
570	2.97	2.89 3.05	24.9	24.6 25.2	67.2	64.7 69.7	75.5	74.5 76.5	1.4	1.2 1.7	1.5	1.3 1.8	0.2	0.0 0.5	0.0	0.0 0.2	3.96	3.80 4.12	4.4	4.1 4.7	1.94	1.76 2.12
10	2.83	2.74 2.92	25.6	25.0 26.0	79.3	76.9 81.7	80.6	79.8 81.4	1.1	0.9 1.3	1.2	1.0 1.5	0.1	0.0 0.3	0.1	0.0 0.4	3.62	3.48 3.76	4.5	4.3 4.7	2.26	2.10 2.42
307	2.62	2.56 2.68	25.4	25.1 25.7	78.1	76.1 80.1	75.2	74.5 75.9	1.3	1.1 1.6	1.4	1.2 1.7	0.2	0.1 0.3	0.3	0.1 0.5	3.90	3.78 4.02	4.3	4.1 4.5	2.74	2.61 2.87
405	2.63	2.54 2.72	25.6	25.2 26.0	77.4	74.2 80.6	75.4	74.4 76.4	1.1	0.9 1.4	1.6	1.3 1.8	0.4	0.0 0.8	0.6	0.1 0.2	3.79	3.62 3.96	4.2	4.0 4.4	2.73	2.54 2.92
377	3.15	3.07 3.23	26.5	26.2 26.8	86.3	83.8 88.8	76.7	75.7 77.7	1.2	0.9 1.4	2.0	1.7 2.3	7.9	6.7 9.2	15.6	13.8 17.5	3.33	3.18 3.48	6.0	5.8 6.2	1.92	1.76 2.08
230	3.04	2.94 3.14	25.3	24.9 25.7	78.7	75.9 81.5	77.4	76.3 78.5	0.9	0.8 1.1	1.2	1.0 1.5	0.2	0.0 0.5	0.1	0.0 0.4	4.11	3.94 4.28	4.5	4.3 4.7	2.12	1.93 2.31
361	3.05	2.92 3.18	26.0	25.5 26.5	83.1	79.0 87.2	76.4	75.0 77.8	1.1	1.0 1.2	1.7	1.5 1.9	3.1	1.8 4.8	10.0	7.4 12.9	3.48	3.27 3.69	5.5	5.2 5.8	1.98	1.76 2.20
283	2.93	2.83 3.03	25.5	25.1 25.9	78.7	75.9 81.5	77.2	76.1 78.3	1.1	0.9 1.3	1.5	1.3 1.8	0.4	0.0 0.9	0.5	0.1 1.0	3.90	3.73 4.07	4.7	4.4 5.0	2.35	2.16 2.54
397	2.84	2.74 2.94	25.0	24.7 25.3	73.8	71.2 76.4	74.5	73.6 75.4	0.9	0.7 1.1	1.4	1.2 1.7	0.2	0.0 0.5	0.3	0.1 0.6	3.88	3.73 4.03	4.8	4.5 5.1	2.18	2.01 2.35
372	2.84	2.71 2.97	25.3	24.8 25.8	73.8	70.2 77.4	77.1	75.8 78.4	1.0	0.9 1.2	1.5	1.3 1.7	0.5	0.1 1.2	0.5	0.1 1.2	3.97	3.77 4.17	4.9	4.5 5.3	2.49	2.28 2.70
304	2.83	2.70 2.96	25.7	25.2 26.2	81.0	77.9 84.1	75.8	74.8 76.8	1.0	0.8 1.2	1.8	1.5 2.0	0.2	0.0 0.6	0.1	0.0 0.4	3.74	3.56 3.92	4.6	4.3 4.9	2.33	2.13 2.53
31	2.84	2.77 2.91	25.6	25.3 25.9	79.3	77.2 81.4	76.9	76.1 77.7	1.4	1.1 1.6	1.6	1.3 1.9	0.2	0.0 0.3	0.2	0.1 0.5	3.98	3.85 4.11	4.7	4.5 4.9	2.29	2.15 2.43
289	2.74	2.66 2.82	25.1	24.7 25.5	73.3	71.1 75.5	77.1	76.3 77.9	1.2	1.0 1.5	1.4	1.1 1.7	0.1	0.0 0.3	0.1	0.0 0.4	4.09	3.96 4.22	4.3	4.1 4.5	2.41	2.26 2.56
392	2.79	2.70 2.88	25.2	24.8 25.6	74.2	71.8 76.6	76.9	76.0 77.8	1.0	0.8 1.2	1.5	1.2 1.8	0.1	0.0 0.3	0.2	0.0 0.5	3.70	3.56 3.84	4.3	4.1 4.5	2.27	2.08 2.46
309	3.15	3.08 3.22	26.4	26.1 26.7	82.2	79.7 84.7	75.1	74.2 76.0	1.1	0.9 1.4	1.9	1.6 2.2	6.5	5.4 7.8	17.9	16.1 19.9	3.19	3.04 3.34	6.0	5.7 6.3	1.95	1.78 2.12

*If the confidence limits for two regressed means overlap, the two means are not significantly different at the 5% level.

Table 1.--Two-year combined summary: Regressed means and 80% confidence limits for traits by stocks entered (Continued)

STOCK CODE	BREEDER'S NAME AND ADDRESS	STOCK		NO. PENS	AVG. CHICK PRICE (Cents)	MORTALITY				AGE AT 50% PRODUCTION (days)		EGG PRODUCTION				HEN-DAY (LAST 30 - 60 DAYS)			
		BREEDING	STRAIN OR TRADE NAME			NO. LOCATIONS	GROWING (percent)	LAYING (percent)		RE- GRESSED MEAN		RE- GRESSED MEAN		HEN HOUSED (number)		HEN-DAY (TO END OF TEST)		HEN-DAY (percent)	
								80% CONF. LIMITS	80% CONF. LIMITS	80% CONF. LIMITS	80% CONF. LIMITS	80% CONF. LIMITS	80% CONF. LIMITS	80% CONF. LIMITS	80% CONF. LIMITS				
399	Davis, Joe K., Hatchery Earl, N. C. 28038	RIR SX	Davis Red -----	47 14	34.0	4.5 5.2	6.0	10.8	9.5 12.0	177 181	204 215	64.3 65.5	63.1 65.5	50.8	49.0 52.6				
371	Demler Farms, Inc. Anaheim, Calif. 92805	WL SX	Demler D-65 -----	14 6	30.0	5.9 5.9	6.8	13.3	14.6	173 179	206 220	66.6 68.3	64.9 68.3	---	---				
514	deZeeuw Leghorn Breeder S. Edmonton, Alta., Can.	WL SX	deZeeuw 752 -----	8 2	36.0	4.8 5.5	6.3	16.7	18.1	178 184	190 203	65.3 67.1	63.5 67.1	55.4	52.7 58.1				
350	Erath Egg Farm Stephenville, Texas 76401	--- INX	Erath Mestiza-----	11 4	35.0	6.3 7.1	5.6	15.3	16.3	170 174	214 221	69.9 72.0	67.8 72.0	58.0	55.4 60.6				
604	Fisher Poultry Farm, Ltd. Ayton, Ontario, Canada	WL SX	Fisher 105-----	12 4	35.0	6.2 7.1	5.4	17.0	18.5	169 172	206 213	66.5 68.2	64.8 68.2	55.7	53.0 58.4				
66	Garber Poultry Br. Farm Modesto, Calif. 95351	WL SX	Garber G 200 -----	48 13	30.8	6.0 6.8	5.2	15.0	16.5	175 178	210 216	67.8 69.2	66.4 69.2	54.0	52.2 55.8				
65	Garber Poultry Br. Farm Modesto, Calif. 95351	CG x WL BX	Garber G x 291-----	41 10	31.2	5.7 6.5	4.9	15.7	17.2	168 171	211 217	67.5 68.9	66.1 68.9	52.1	50.1 54.1				
255	Garrison, Earl W. Bridgeton, N. J. 08302	WL SX	Garrison Leghorn -	1 1	33.0	5.8 6.2	5.3	15.2	16.0	180 184	212 218	69.4 71.6	67.2 71.6	59.1	56.4 61.8				
69	Garrison, Earl W. Bridgeton, N. J. 08302	RIR x WPR BX	Golden Sex Link ---	6 4	34.0	6.8 7.6	6.0	15.6	16.8	173 177	204 211	64.5 66.4	62.6 66.4	52.8	49.9 55.7				
72	Ghostley Enterprises, Inc. Anoka, Minn. 55303	WL SX	Ghostley Pearl-----	13 7	33.3	6.2 7.0	5.4	13.9	15.2	167 170	222 229	70.5 72.3	68.7 72.3	60.2	58.1 62.3				
225	Harco Orchards & Plty. Farm South Easton, Mass. 02375	RIR x BPR BX	Harco Sex Link-----	28 10	34.3	4.7 5.4	4.0	14.7	16.1	176 179	212 218	67.3 68.6	66.0 68.6	54.9	52.8 57.0				
86	Hardy, C. Nelson & Sons Essex, Mass. 01929	RIR x BPR BX	Deluxe Sex Link ---	6 3	32.0	3.6 4.3	3.0	14.3	15.6	176 179	199 206	60.4 62.1	58.7 62.1	46.5	43.7 49.3				
88	Heisdorf & Nelson Farms Redmond, Wash. 98052	WL SX	H & N Nick Chick--	16 5	33.0	4.9 5.7	4.2	14.1	15.5	175 179	215 222	69.4 70.9	67.9 70.9	---	---				
92	Honegger Breeder Hatchery Forrest, Ill. 61741	WL SX	Honegger Layer ---	32 12	34.0	5.0 5.7	4.3	14.6	16.0	171 174	217 224	68.9 70.4	67.4 70.4	60.0	57.4 62.6				
378	Hubbard Farms, Inc. Walpole, N. H. 03608	Syn x NH BX	Golden Comet-----	31 9	35.8	3.7 4.4	3.1	15.1	16.6	170 173	208 213	64.4 65.6	63.2 65.6	48.2	46.4 50.0				

STOCK CODE	FEED PER POUND OF EGGS PRODUCED (pounds)			EGG WEIGHT (oz./doz.)			LARGE AND EXTRA LARGE EGGS (percent)			ALBUMEN QUALITY (Haugh units)			BLOOD SPOTS						MEAT SPOTS						SPECIFIC GRAVITY SCORE			BODY WEIGHT (pounds)			INCOME OVER FEED AND CHICK COST (dollars)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	1/8 INCH OR MORE (percent)		LESS THAN 1/8 INCH (percent)		1/8 INCH OR MORE (percent)		LESS THAN 1/8 INCH (percent)		RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

*If the confidence limits for two regressed means overlap, the two means are not significantly different at the 5% level.

STOCK CODE	FEED PER POUND OF EGGS PRODUCED (pounds)			EGG WEIGHT (oz./doz.)			LARGE AND EXTRA LARGE EGGS (percent)			ALBUMEN QUALITY (Haugh units)			BLOOD SPOTS						MEAT SPOTS						SPECIFIC GRAVITY SCORE			BODY WEIGHT (pounds)			INCOME OVER FEED AND CHICK COST (dollars)		
	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	1/8 INCH OR MORE (percent)			LESS THAN 1/8 INCH (percent)			1/8 INCH OR MORE (percent)			LESS THAN 1/8 INCH (percent)			RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS
										RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS	RE-GRESSED MEAN	80% CONF. LIMITS	80% CONF. LIMITS												
96	2.66	2.59	2.73	26.1	25.8	26.4	83.7	81.4	86.0	73.6	72.7	74.5	0.8	0.7	1.0	1.4	1.7	1.2	0.1	0.4	0.0	0.2	0.5	0.1	4.13	3.98	4.28	4.0	4.2	3.8	2.47	2.31	2.63
385	2.66	2.59	2.73	26.4	26.1	26.7	84.8	82.6	87.0	72.9	72.1	73.7	1.0	0.8	1.2	1.1	1.4	0.9	0.0	0.2	0.0	0.1	0.3	4.16	4.02	4.30	4.0	4.2	3.8	2.36	2.21	2.51	
408	2.71	2.58	2.84	26.5	26.0	27.0	91.0	87.4	94.6	72.8	71.6	74.0	1.0	0.9	1.2	1.3	1.6	1.1	0.0	0.4	0.0	0.2	0.7	4.71	4.51	4.91	4.1	4.5	3.7	---	---	---	
388	2.56	2.49	2.63	26.2	25.9	26.5	84.0	81.8	86.2	72.6	71.8	73.4	0.6	0.5	0.8	1.0	1.3	0.8	0.0	0.2	0.0	0.1	0.3	4.30	4.17	4.43	4.0	4.2	3.8	2.61	2.46	2.76	
356	2.72	2.65	2.79	25.8	25.5	26.1	81.0	78.8	83.2	74.9	74.1	75.7	0.9	0.7	1.1	1.3	1.6	1.1	0.0	0.3	0.0	0.1	0.4	4.06	3.93	4.19	4.6	4.8	4.4	2.57	2.42	2.72	
152	2.80	2.73	2.87	25.5	25.2	25.8	79.9	77.5	82.3	81.7	80.9	82.5	0.9	0.7	1.1	1.2	1.5	1.0	0.0	0.3	0.0	0.2	0.4	3.75	3.61	3.89	4.4	4.6	4.2	2.37	2.20	2.54	
234	2.81	2.69	2.93	25.6	25.1	26.1	79.6	76.4	82.8	81.1	80.0	82.2	1.1	0.9	1.3	1.5	1.8	1.3	0.0	0.6	0.0	0.2	0.5	3.72	3.54	3.90	4.5	4.8	4.2	2.41	2.21	2.61	
404	2.90	2.78	3.02	25.1	24.7	25.5	73.9	70.6	77.2	76.2	75.0	77.4	1.1	1.0	1.3	1.2	1.4	1.0	0.0	0.4	0.0	0.1	0.5	3.92	3.73	4.11	4.5	4.8	4.2	2.17	1.96	2.38	
110	2.72	2.66	2.78	25.0	24.7	25.3	73.7	71.5	75.9	82.2	81.4	83.0	1.0	0.8	1.2	1.3	1.6	1.1	0.1	0.5	0.0	0.3	0.6	4.41	4.28	4.54	4.3	4.6	4.0	2.51	2.36	2.66	
111	2.73	2.67	2.79	25.1	24.8	25.4	76.2	74.1	78.3	76.6	75.8	77.4	1.4	1.2	1.7	1.5	1.8	1.2	0.0	0.3	0.0	0.2	0.4	4.20	4.07	4.33	4.4	4.6	4.2	2.31	2.16	2.46	
112	2.78	2.68	2.88	25.1	24.7	25.5	73.7	71.0	76.4	81.1	80.0	82.2	1.0	0.8	1.2	1.6	1.8	1.3	0.0	0.4	0.0	0.2	0.6	4.28	4.11	4.45	4.5	4.7	4.3	2.37	2.18	2.56	
117	3.34	3.24	3.44	26.8	26.4	27.2	87.9	85.4	90.4	77.9	77.0	78.8	1.3	1.1	1.5	2.0	2.3	1.7	6.6	9.3	6.6	20.4	18.4	3.60	3.45	3.75	5.9	6.1	5.7	1.53	1.36	1.70	
37	3.26	3.18	3.34	24.0	23.7	24.3	62.2	60.0	64.4	77.0	76.2	77.8	1.6	1.3	1.8	1.7	2.0	1.4	0.1	0.4	0.0	0.2	0.4	3.93	3.80	4.06	4.6	4.8	4.4	1.49	1.34	1.64	
157	3.31	3.19	3.43	24.8	24.4	25.2	69.7	65.5	73.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.6	5.9	1.69	1.91	2.34	
352	2.78	2.71	2.85	25.7	25.4	26.0	81.6	79.4	83.8	76.5	75.7	77.3	1.1	0.9	1.3	1.4	1.7	1.1	0.2	0.7	0.2	0.2	0.5	4.03	3.90	4.16	4.7	4.9	4.5	2.49	2.34	2.64	

*If the confidence limits for two regressed means overlap, the two means are not significantly different at the 5% level.

Table 1.--Two-year combined summary: Regressed means and 80% confidence limits for traits by stocks entered (Continued)

STOCK CODE	BREEDER'S NAME AND ADDRESS	STOCK		NO. PENS	AVG. CHICK PRICE (Cents)	MORTALITY				AGE AT 50% PRODUCTION (days)		HEN HOUSED (number)		HEN-DAY (TO END OF TEST) (percent)		HEN-DAY (LAST 30 - 60 DAYS) (percent)			
		BREEDING	STRAIN OR TRADE NAME			GROWING (percent)		LAYING (percent)		RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS
						RE- GRESSED MEAN	80% CONF. LIMITS	RE- GRESSED MEAN	80% CONF. LIMITS										
382	Parks Poultry Farm Altoona, Pa. 16601	RIR x WPR BX	Sil-Go-Links-----	10 2	35.0	5.7 7.2	6.4 7.2	14.7 16.8	172 176	168 176	197 204	211 211	62.0 66.2	64.1 66.2	55.5 58.4	52.6 58.4			
159	Randall Hatchery & Br. Farm Cherry Valley, Calif. 92223	CG x WL BX	Gray x Leghorn----	4 1	30.0	5.1 6.5	5.7 6.5	15.0 17.3	166 170	162 170	209 216	216 216	67.7 69.8	65.6 67.7	---	---			
566	St. Augustin Coop. Hatchery St. Augustin, Quebec, Can.	WL SX	Corvette A-1-----	8 2	38.0	4.1 5.5	4.8 5.5	13.2 15.8	165 171	168 171	215 222	208 222	64.9 68.7	66.8 68.7	54.3 59.7	54.3 59.7			
181	Shaver Poultry Breeding Farm Galt, Ontario, Canada	WL SX	Starcross 288-----	87 23	36.3	4.4 5.8	5.1 5.8	14.1 17.0	170 173	176 176	227 232	222 232	72.6 75.0	73.8 75.0	61.4 64.2	61.4 64.2			
533	Starline Breeders Hatchery Saskatoon, Sask., Canada	CG x WL BX	Pearlette-----	11 4	38.0	4.8 6.4	5.5 6.4	14.4 17.2	166 170	174 174	210 216	203 216	65.4 68.8	67.1 68.8	49.0 54.6	49.0 54.6			
190	Stone's Poultry Farm Dinuba, Calif. 93618	WL SX	Stone H 56-----	44 15	34.7	5.5 7.1	6.3 7.1	14.5 17.5	168 171	174 174	206 211	201 211	65.3 67.7	66.5 67.7	49.4 53.8	49.4 53.8			
336	Sturtevant Farms, Inc. Halifax, Mass. 02338	RIR x BPR BX	Black Sex Link-----	22 6	32.0	3.7 5.1	4.4 5.1	11.3 13.9	174 177	180 180	204 210	198 210	60.8 63.6	62.2 63.6	47.9 52.3	47.9 52.3			
401	Tatum Farms Dawsonville, Ga. 30534	WL SX	Tatum T-100-----	31 14	38.2	5.5 7.2	6.4 7.2	13.3 16.0	172 175	178 178	208 215	202 215	64.5 67.3	65.9 67.3	53.1 56.3	53.1 56.3			
407	Thorner's Ppty. Res. Dept. Retford, Nottingham, Eng.	WL SX	Thorner 808-----	6 2	49.0	4.8 6.3	5.5 6.3	12.9 15.3	163 167	171 171	222 236	222 236	71.3 75.1	73.2 75.1	59.2 64.8	59.2 64.8			
406	Tokai Ppty. Farm Ltd. Retreat, Cape, S. Afr.	AW BX	Tokai 67-----	4 1	35.0	4.3 5.6	4.9 5.6	14.3 16.5	161 165	169 169	213 220	206 220	66.4 70.6	68.5 70.6	---	---			
305	Warren, J. J., Inc. N. Brookfield, Mass. 01535	RIR x RIW BX	Sex-Sal-Link-F----	16 7	37.5	3.8 5.2	4.4 5.2	11.4 14.0	174 177	180 180	210 216	203 216	63.3 66.3	64.8 66.3	49.5 54.9	49.5 54.9			
290	Welp's Breeding Farm Bancroft, Iowa 50517	WL SX	Welpine 937-----	64 16	34.0	3.8 5.1	4.4 5.1	12.9 15.7	164 167	170 170	218 223	212 223	67.7 70.1	68.9 70.1	54.7 57.7	54.7 57.7			

STOCK CODE	FEED PER POUND OF EGGS PRODUCED			EGG WEIGHT (oz./doz.)			LARGE AND EXTRA LARGE EGGS (percent)			ALBUMEN QUALITY (Haugh units)			BLOOD SPOTS						MEAT SPOTS						SPECIFIC GRAVITY SCORE			BODY WEIGHT (pounds)			INCOME OVER FEED AND CHICK COST (dollars)																																																																																																																																																																																																																																																																																			
	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	LESS THAN 1/8 INCH (percent)			GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	LESS THAN 1/8 INCH (percent)			GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. 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LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. LIMITS	RE-80% GRESSED MEAN	1/8 INCH OR MORE (percent)	GRESSED MEAN	80% CONF. 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*If the confidence limits for two regressed means overlap, the two means are not significantly different at the 5% level.

Statistical Methods

The 2-year combined summary includes performance data on 45 stocks that were entered in both the 1967-68 and 1968-69 tests and on 13 stocks that were entered only in the 1968-69 tests. Birds were tested at 24 locations in each of the two years, although every location was not included each year. Table 3 lists the locations. Certain traits were not measured at some of the locations. These are identified with an NR (not reported) in the appropriate columns in table 3.

Replicate data were reported by 14 locations in 1967-68 and by 17 locations in 1968-69. In addition, six locations in 1967-68 and three in 1968-69 tested the stocks in replicate pens, but the number of birds per replicate was too small for a valid analysis. Consequently, the replicate data were combined by entries within each of these locations, and the resulting entry average was used in the computations. This was done to more nearly equalize the variance among pens throughout all tests. The number of pens and the number of stocks tested at each location for the 2 years are given in table 3.

The percentage data for both years for the six traits--growing mortality, laying mortality, large blood spots, small blood spots, large meat spots, and small meat spots--were converted to angles with the arcsin transformation prior to analysis. However, the test-year adjustment factors shown in table 3 and the regressed means and confidence limits shown for these traits in table 1 are given in percent.

The replicate data were analyzed by least-squares procedures to obtain the test-year adjustment factors shown in table 3, and the repeatability estimates and the correlations among pens within tests shown in table 2. The test-year adjustment factors were then used to adjust the simple stock average for test and year effects. The adjusted stock averages (the least-squares stock means) were then regressed toward the overall mean ($\hat{\mu}$) to account for variations in number of tests entered, number of years entered, and number of replicates per test. The formula used to compute the regressed mean is:

$$\text{Regressed Mean} = \hat{\mu} + \frac{r_{2/C}}{1 + (k_3 - 1)x_1 + (k_1 - k_3)x_2 + (k_2 - k_3)r_1 + [(1/C) - k_1 - k_2 + k_3]r_2} (\hat{s})$$

where: $\hat{\mu}$ = the average of the test and year adjusted stock means.

r_1 = repeatability within year.

r_2 = repeatability from year-to-year.

x_1 = the correlation among replicates within year and test.

x_2 = the correlation among pens of the same stock from year-to-year for the same test.

k_1 = an average of the number of pens per test (averaged over years).

k_2 = an average of the number of pens per year (averaged over tests).

k_3 = an average of the number of replicates per test-year subclass.

C = the diagonal inverse element for that stock. The reciprocal of C , i.e., $\frac{1}{C}$, is equal to nk_3 if the assumption is made that the adjustments for test-year effects are made without error; where n is the number of test-year subclasses in which that stock is entered.

s = the test-year adjusted stock average minus the overall mean $\hat{\mu}$.

The correlations used in computing the regression coefficient were obtained from estimates of the variance components for stocks ($\hat{\sigma}_s^2$), the stock-X-test interaction ($\hat{\sigma}_{st}^2$), the stock-X-year interaction ($\hat{\sigma}_{sy}^2$), and the random error ($\hat{\sigma}_e^2$). The variance component estimates were obtained by equating the computed mean squares for these effects to their expectations. The mean square for stocks was adjusted for the test-year subclass by least-squares procedures for the effects of stocks and the test-year subclasses. The three-factor interaction was assumed to be non-existent. Ratios of the variance component estimates that were used to compute the correlations follow:

$$\begin{aligned} \text{Correlation Among Replicates} &= x_1 = \frac{\hat{\sigma}_s^2 + \hat{\sigma}_{st}^2 + \hat{\sigma}_{sy}^2}{\hat{\sigma}_s^2 + \hat{\sigma}_{st}^2 + \hat{\sigma}_{sy}^2 + \hat{\sigma}_e^2} \\ \text{Correlation from Year-to-Year (same test)} &= x_2 = \frac{\hat{\sigma}_s^2 + \hat{\sigma}_{st}^2}{\hat{\sigma}_s^2 + \hat{\sigma}_{st}^2 + \hat{\sigma}_{sy}^2 + \hat{\sigma}_e^2} \\ \text{Repeatability from Test-to-Test (within year)} &= r_1 = \frac{\hat{\sigma}_s^2 + \hat{\sigma}_{sy}^2}{\hat{\sigma}_s^2 + \hat{\sigma}_{st}^2 + \hat{\sigma}_{sy}^2 + \hat{\sigma}_e^2} \\ \text{Repeatability from Test-to-Test (between years)} &= r_2 = \frac{\hat{\sigma}_s^2}{\hat{\sigma}_s^2 + \hat{\sigma}_{st}^2 + \hat{\sigma}_{sy}^2 + \hat{\sigma}_e^2} \end{aligned}$$

An approximate standard error (SE) was computed for each regressed mean as follows:

$$SE = b \sqrt{C(\hat{\sigma}_e^2 + k_1 \hat{\sigma}_{st}^2 + k_2 \hat{\sigma}_{sy}^2)}$$

where b is the regression coefficient given above in the formula for the regressed mean. Confidence limits were then computed for each regressed mean as follows:

$$\text{Regressed Mean} \pm 1.3 \text{ SE}$$

The constant 1.3 was selected in order that the probability of the confidence limits overlapping by chance alone between any two means would be about 0.03. This makes the test of significance among regressed means almost comparable to using Duncan's range test at the 0.05 level of probability.

Definitions of Statistical Terms

The following definitions will help the reader interpret the analytical procedures:

Overall mean	The average of the test-year adjusted means for all stocks. This is an estimate of what the overall average would have been had all stocks been entered in all tests in both years.
Range	The range represents the difference between the expected maximum and minimum performance among the 69 stocks, based on the regressed means.
Common stocks	Stocks that are being tested at more than one location.
Test-year adjustment factor.	The amount added to or subtracted from the actual performance of the stocks at a given location in a given year to bring them to the average of all the location-year subclasses that had complete data. These factors were determined on an intrastock basis with a least-squares analysis, and they are given in table 3.
Repeatability within year.	An intraclass correlation that measures the tendency for common stocks to rank the same from test-to-test within year. Theoretically, it can vary from 0.00 to 1.00.
Repeatability between years.	A correlation which measures the tendency for common stocks to rank the same from test-to-test from one year to another. The difference between the repeatability within year and repeatability between years indicates the relative importance of the stock-by-year interaction.
Correlation among replicates.	This correlation measures the repeatability among replicates of the same stock in the same test and year. The higher the correlation among replicates the less need there is for replication of stocks within test and year.
Correlation from year-to-year within tests.	A correlation which measures the tendency for common stock to rank the same from year-to-year when tested at the same location. The difference in the repeatability between years and in the correlation from year-to-year within tests indicates the relative importance of the stock-by-test interaction.
Confidence limits	The confidence limits for each regressed mean are computed so that the probability is about 0.08 that the "true" stock mean lies within the interval. They are presented in this report, however, for the purpose of providing approximate tests of significance for differences among stocks.

Table 2.--Analytical data for the traits measured

Test	Overall means	Regressed means		Repeatability		Correlations within test	
				Within year (r_1)	Year-to-year (r_2)	Among replicates (x_1)	Year-to-year (x_2)
		Min.	Max.				
Growing mortality..... percent..	5.7	3.6	8.3	0.1667	0.1066	0.1667	0.1066
Laying mortality..... percent..	15.0	10.8	17.8	.1057	.0711	.1683	.1337
Age at 50 percent production ..days..	173.1	165	182	.4965	.4751	.6491	.6276
Hen-housed egg production .number..	211.3	194	230	.3185	.2801	.4542	.4158
Hen-day egg production to end of test ..percent..	67.2	60.0	73.8	.5090	.4934	.6442	.6287
Hen-day egg production last 30 to 60 days ..percent..	56.3	46.5	62.8	.3521	----	.4547	----
Feed per pound of eggs..... pounds..	2.86	2.56	3.34	.6403	.6281	.7586	.7464
Egg weight ounces/dozen..	25.4	24.0	27.4	.7832	.7506	.8499	.8173
Large and extra large eggs.percent..	76.6	61.1	91.0	.9147	.8950	.9527	.9330
Albumen quality.....Haugh units..	77.0	72.6	82.2	.6542	.6179	.7178	.6815
Large blood spots percent..	1.1	.6	1.8	.0675	.0603	.2675	.2603
Small blood spots percent..	1.5	1.0	2.2	.1357	.0719	.3386	.2748
Large meat spots percent..	.7	0	9.3	.7079	.6955	.8101	.7977
Small meat spots percent..	1.4	0	20.4	.8744	.8595	.9075	.8927
Specific gravity score..	3.84	2.91	4.71	.5995	.5492	.6702	.6199
Body weight pounds..	4.7	4.0	6.8	.9058	.8885	.9371	.9198
Income over feed and chick costdollars..	2.25	1.49	2.74	.4677	.4191	.6734	.6249

Table 3.--Factors used to adjust for test differences

Test	Pens		Stocks tested		Mortality (percent)			
	(number)		(number)		Growing period		Laying period	
	1968	1969	1968	1969	1968	1969	1968	1969
Arizona No. 1 - Floor -----	5	--	5	--	+0.82	----	-1.10	----
Arizona No. 3 - (5/cage) -----	5	--	5	--	+ .82	----	-5.00	----
Arizona No. 4 - (2/cage) -----	5	--	5	--	+ .82	----	- .87	----
Br. Columbia No. 1 - (5/cage) --	20	--	10	--	+ .74	----	-1.68	----
Br. Columbia No. 2 - (5/cage) --	20	--	10	--	+ .74	----	-2.01	----
California No. 1 - Floor -----	--	76	--	19	----	+3.23	----	+1.26
Central Canada No. 1 - Floor---	30	34	15	17	+ .59	+ .29	+ .65	- .04
Central Canada No. 5 - (1/cage)-	--	68	--	17	----	+ .30	----	- .01
Florida No. 1 - Floor-----	48	48	12	12	+ .01	+ .10	+ .01	-1.93
Florida No. 3 - (2/cage)-----	--	48	--	12	----	+ .10	----	-2.91
Minnesota No. 1 - Floor-----	13	16	13	16	+ .16	+ .02	+ .64	+ .27
Minnesota No. 4 - (3/cage) -----	39	48	13	16	+ .16	+ .02	+ .20	+ .03
Missouri - Cage (8/cage) -----	45	90	15	15	+ .50	- .01	- .01	+ .41
Missouri - Floor -----	93	96	31	24	+ .90	+ .06	+1.54	+ .51
New Brunswick No. 2 -----	16	--	8	--	+3.28	----	+1.60	----
New Brunswick No. 3 -----	16	--	8	--	+3.17	----	+2.56	----
New Hampshire No. 2 - (6/cage)-	16	15	16	15	-1.26	-1.05	+ .21	-1.84
New Hampshire No. 4 - (2/cage)-	16	17	16	17	- .07	- .25	- .43	- .40
New Hampshire No. 6 - Floor---	16	17	16	17	- .02	- .26	+ .01	- .16
New Jersey -----	12	12	12	12	+ .92	+ .50	+ .63	+ .94
North Carolina No. 2 - Slat-----	40	40	20	20	+ .06	+ .46	-1.16	- .01
North Carolina No. 3-----	40	40	20	20	+ .41	- .67	- .03	-3.41
North Carolina No. 4 - (2/cage) -	80	80	20	20	+ .20	- .01	- .52	- .01
Pennsylvania -----	30	48	30	24	+1.66	- .39	+5.47	+1.70
Tennessee No. 1 - (1/cage) -----	16	14	16	14	-3.22	- .80	-1.74	- .07
Tennessee No. 2 - (2/cage) -----	32	28	16	14	-3.22	- .80	-2.14	- .09
Tennessee No. 3 - (1/cage) -----	--	14	--	14	----	- .80	----	- .13
Tennessee No. 4 - (2/cage) -----	--	28	--	14	----	- .80	----	- .08
Texas - Cage (2/cage)-----	28	26	13	12	+ .46	- .92	+ .52	- .01
Texas No. 3 - (2/cage) -----	--	26	--	12	----	- .92	----	+ .06
Texas No. 4 - (2/cage) -----	--	25	--	12	----	- .92	----	- .01

Table 3.--Factors used to adjust for test differences--Continued

Test	Age at 50 percent production (days)		Egg production					
			Hen-housed (number)		Hen-day (to end of test) (percent)		Hen-day (last 30-60 days) (percent)	
	1968	1969	1968	1969	1968	1969	1968	1969
Arizona No. 1 - Floor-----	- 1.24	-----	+ 6.73	-----	+0.92	-----	-----	-----
Arizona No. 3 - (5/cage) -----	+ 1.57	-----	+10.65	-----	+ .04	-----	-----	-----
Arizona No. 4 - (2/cage) -----	+ 1.17	-----	- 2.06	-----	-1.45	-----	-----	-----
Br. Columbia No. 1 - (5/cage) ---	+ 7.44	-----	+20.61	-----	+2.13	-----	-----	-----
Br. Columbia No. 2 - (5/cage) ---	+ 6.34	-----	+31.13	-----	+3.32	-----	-----	-----
California No. 1 - Floor-----	-----	-11.40	-----	-33.96	-----	+6.54	-----	NR*
Central Canada No. 1 - Floor----	+ .74	+ 2.59	-13.11	+ 8.11	-4.15	+ .17	-----	+ .82
Central Canada No. 5 - (1/cage)--	-----	+ 1.93	-----	+ 5.48	-----	- .26	-----	-1.18
Florida No. 1 - Floor-----	- .09	+12.42	-33.90	-11.26	-2.78	- .44	-----	- .80
Florida No. 3 - (2/cage)-----	-----	+12.15	-----	- 2.76	-----	+ .97	-----	+ .06
Minnesota No. 1 - Floor-----	-10.34	- 7.00	-12.35	+ 2.15	+3.95	+3.31	-----	+3.30
Minnesota No. 4 - (3/cage) -----	-13.47	+ 2.19	+10.55	+10.44	+6.14	+5.37	-----	+7.37
Missouri - Cage (8/cage)-----	- 7.11	-11.17	-25.74	+ 7.50	- .09	+ .19	-----	NR*
Missouri - Floor -----	+ 4.99	+ 8.10	-22.01	-15.56	-5.10	-2.05	-----	NR*
New Brunswick No. 2 -----	+ 8.93	-----	-24.92	-----	-8.09	-----	-----	-----
New Brunswick No. 3 -----	+ 6.74	-----	-21.75	-----	-7.25	-----	-----	-----
New Hampshire No. 2 - (6/cage)--	- 7.53	- 3.17	+12.67	+29.46	+2.32	+3.30	-----	-3.11
New Hampshire No. 4 - (2/cage)--	- 2.59	+ 3.76	+ 4.41	+ 9.62	-2.77	- .38	-----	-4.40
New Hampshire No. 6 - Floor ---	- 2.09	+ 4.29	+ 4.72	+10.05	+ .22	+1.11	-----	-2.13
New Jersey -----	+ 2.35	+ 8.58	-17.61	-20.60	-3.06	-2.00	-----	-6.45
North Carolina No. 2 - Slat-----	- 5.45	- .69	+28.84	+ 7.34	+ .74	- .16	-----	-1.11
North Carolina No. 3 -----	- 2.03	- .57	- 5.22	+17.47	-6.07	-2.84	-----	-5.47
North Carolina No. 4 - (2/cage) --	- 1.50	+ .04	+21.40	+11.58	+ .43	+ .30	-----	- .74
Pennsylvania -----	- 1.09	+12.48	-43.96	-30.89	-6.56	-4.79	-----	-7.73
Tennessee No. 1 - (1/cage)-----	- .37	+10.37	+17.25	+ 2.24	-1.21	+4.03	-----	+2.91
Tennessee No. 2 - (2/cage)-----	+ 1.07	+ 9.44	+15.86	+ 6.25	-1.44	+4.70	-----	+4.65
Tennessee No. 3 - (1/cage)-----	-----	+ 8.58	-----	- .64	-----	+4.17	-----	+4.83
Tennessee No. 4 - (2/cage)-----	-----	+10.54	-----	+ 5.17	-----	+5.21	-----	+4.60
Texas - Cage (2/cage)-----	+ .67	- 7.80	- 1.82	+16.18	+3.08	+6.52	-----	+2.53
Texas No. 3 - (2/cage)-----	-----	- 7.68	-----	+13.77	-----	+5.80	-----	+1.96
Texas No. 4 - (2/cage)-----	-----	- 7.90	-----	+19.00	-----	+6.64	-----	+ .11

* Data for this trait not reported.

Table 3.--Factors used to adjust for test differences--Continued

Test	Feed per pound of eggs		Egg weight		Large and extra large eggs		Albumen quality	
	(pounds)		(oz./dozen)		(percent)		(Haugh units)	
	1968	1969	1968	1969	1968	1969	1968	1969
Arizona No. 1 - Floor-----	-0.23	----	+1.32	----	+33.24	-----	-6.69	----
Arizona No. 3 - (5/cage) -----	- .01	----	+1.14	----	+26.00	-----	-8.43	----
Arizona No. 4 - (2/cage) -----	+ .19	----	+ .84	----	+24.32	-----	-7.51	----
Br. Columbia No. 1 - (5/cage) ---	- .21	----	- .12	----	+15.28	-----	-1.42	----
Br. Columbia No. 2 - (5/cage) ---	- .30	----	- .09	----	+16.12	-----	-1.90	----
California No. 1 - Floor-----	----	- .03	----	- .03	-----	- 8.48	----	NR*
Central Canada No. 1 - Floor ----	- .08	- .20	+ .09	- .01	+ 8.32	+10.30	+4.50	+4.48
Central Canada No. 5 - (1/cage)--	----	- .09	----	- .31	-----	+ 4.94	----	+3.49
Florida No. 1 - Floor-----	+ .24	+ .20	+ .49	+ .77	+ 3.74	+10.89	-6.98	-4.39
Florida No. 3 - (2/cage)-----	----	+ .26	----	+ .18	-----	+ 3.64	----	-4.18
Minnesota No. 1 - Floor-----	- .32	- .30	+ .56	- .29	- 3.98	- 6.30	-6.60	-9.82
Minnesota No. 4 - (3/cage) -----	- .27	- .18	+ .24	- .18	- 4.50	- 6.32	-8.67	-8.54
Missouri - Cage (8/cage) -----	+ .14	- .12	- .45	- .23	- 9.78	- 9.10	+ .52	-3.04
Missouri - Floor -----	+ .08	+ .06	+ .49	+1.17	- 3.10	+ 2.27	- .38	-1.48
New Brunswick No. 2 -----	+ .15	----	- .07	----	+ 7.78	-----	+15.46	----
New Brunswick No. 3 -----	+ .21	----	+ .08	----	+ 9.80	-----	+15.63	----
New Hampshire No. 2 - (6/cage)-	- .29	- .69	- .68	+ .42	+ 2.20	+ 3.95	+11.67	+10.03
New Hampshire No. 4 - (2/cage)-	+ .04	+ .05	+ .68	+ .18	+ 2.45	- .31	+ 8.16	+6.82
New Hampshire No. 6 - Floor----	+ .06	+ .15	+ .39	- .05	+ 1.15	- 2.27	+ 6.96	+6.31
New Jersey -----	+ .01	+ .01	+ .38	+ .14	+15.50	+10.50	- 4.42	-4.59
North Carolina No. 2 - Slat-----	- .12	+ .04	-1.36	-1.37	-10.21	-13.02	- 2.24	+1.90
North Carolina No. 3 -----	+ .25	+ .20	- .74	- .87	- 7.11	-10.48	- 1.72	+3.53
North Carolina No. 4 - (2/cage) --	+ .24	+ .34	-1.34	-1.58	- 9.85	-13.09	- 2.78	+3.47
Pennsylvania-----	+ .19	+ .29	+ .38	+ .05	+ 5.23	+ 9.39	+ .96	+1.16
Tennessee No. 1 - (1/cage)-----	- .03	- .17	- .06	+ .83	+ 3.49	+ 9.20	+ 2.19	- .97
Tennessee No. 2 - (2/cage)-----	+ .18	- .08	+ .12	+ .66	+ 2.18	+ 8.67	+ 2.44	+1.57
Tennessee No. 3 - (1/cage)-----	----	- .19	----	+1.22	-----	+12.52	-----	- .25
Tennessee No. 4 - (2/cage)-----	----	- .13	----	+1.12	-----	+13.15	-----	+1.00
Texas - Cage (2/cage)-----	+ .14	- .04	+ .72	+ .49	+10.62	NR*	- 4.37	-5.69
Texas No. 3 - (2/cage)-----	----	- .01	----	+ .52	-----	NR*	-----	-5.57
Texas No. 4 - (2/cage)-----	----	- .05	----	+ .38	-----	NR*	-----	-5.55

* Data for this trait not reported.

Table 3. --Factors used to adjust for test differences-- Continued

Test	Blood spots 1/8 inch or more		Blood spots less than 1/8 inch		Meat spots 1/8 inch or more		Meat spots less than 1/8 inch	
	(percent)		(percent)		(percent)		(percent)	
	1968	1969	1968	1969	1968	1969	1968	1969
Arizona No. 1 - Floor-----	+0.34	----	+0.47	----	+0.11	----	+0.20	----
Arizona No. 3 - (5/cage) -----	+ .34	----	+ .08	----	+ .11	----	+ .20	----
Arizona No. 4 - (2/cage) -----	+ .08	----	+ .28	----	+ .11	----	+ .20	----
Br. Columbia No. 1 - (5/cage) ---	- .01	----	- .37	----	+ .05	----	+ .10	----
Br. Columbia No. 2 - (5/cage) ---	- .05	----	- .54	----	+ .05	----	+ .07	----
California No. 1 - Floor-----	----	NR*	----	NR*	----	NR*	----	NR*
Central Canada No. 1 - Floor----	+ .04	+ .09	+ .01	- .02	+ .07	+ .08	+ .01	- .01
Central Canada No. 5 - (1/cage)--	----	- .02	----	- .27	----	+ .05	----	- .04
Florida No. 1 - Floor-----	- .10	- .11	- .13	- .20	+ .02	+ .03	+ .13	+ .18
Florida No. 3 - (2/cage)-----	----	- .26	----	- .20	----	+ .05	----	+ .18
Minnesota No. 1 - Floor-----	+ .02	+ .03	- .02	+ .04	+ .06	- .11	+ .07	+ .22
Minnesota No. 4 - (3/cage) -----	+ .03	+ .01	+ .01	+ .25	+ .02	+ .07	+ .36	+ .13
Missouri - Cage (8/cage)-----	- .33	- .07	- .30	- .25	+ .01	+ .01	+ .01	- .07
Missouri - Floor -----	- .06	+ .01	- .15	- .02	+ .03	+ .06	- .01	- .03
New Brunswick No. 2 -----	- .04	----	- .16	----	- .55	----	-2.43	----
New Brunswick No. 3 -----	+ .01	----	- .09	----	- .50	----	-2.21	----
New Hampshire No. 2 - (6/cage)-	+ .06	- .01	+ .07	+ .19	- .05	- .08	- .02	+ .14
New Hampshire No. 4 - (2/cage)-	+ .01	+ .19	+ .02	+ .13	+ .07	-1.01	- .52	- .01
New Hampshire No. 6 - Floor----	+ .06	+ .06	- .22	+ .44	- .25	- .53	- .43	- .23
New Jersey -----	+ .14	+ .09	- .01	+ .03	+ .05	- .08	- .84	-1.07
North Carolina No. 2 - Slat-----	+ .01	- .01	+ .01	+ .01	+ .01	- .01	- .12	- .03
North Carolina No. 3-----	- .03	- .02	+ .01	- .02	+ .05	- .08	- .02	- .06
North Carolina No. 4 - (2/cage) --	- .11	- .05	- .12	- .06	+ .04	- .01	- .09	- .07
Pennsylvania-----	+ .01	+ .06	- .02	+ .06	+ .72	+ .67	+ .86	+ .54
Tennessee No. 1 - (1/cage)-----	- .12	+ .01	- .01	+ .03	+ .01	+ .07	+ .28	+ .11
Tennessee No. 2 - (2/cage)-----	- .01	+ .09	+ .01	+ .25	+ .09	+ .08	+ .37	+ .11
Tennessee No. 3 - (1/cage)-----	----	- .02	----	+ .08	----	+ .14	----	+ .26
Tennessee No. 4 - (2/cage)-----	----	+ .01	----	+ .04	----	+ .09	----	+ .10
Texas - Cage (2/cage)-----	- .12	- .07	- .01	+ .06	- .45	- .22	- .10	- .03
Texas No. 3 - (2/cage)-----	----	- .26	----	+ .01	----	- .19	----	+ .02
Texas No. 4 - (2/cage)-----	----	- .01	----	+ .01	----	- .11	----	- .01

* Data for this trait not reported.

Table 3.--Factors used to adjust for test differences--Continued

Test	Specific gravity score		Body weight (pounds)		Income over feed and chick cost (dollars)	
	1968	1969	1968	1969	1968	1969
Arizona No. 1 - Floor-----	-2.66	----	+0.38	----	+0.49	----
Arizona No. 3 - (5/cage) -----	-2.39	----	+ .38	----	+ .17	----
Arizona No. 4 - (2/cage) -----	-2.58	----	+ .52	----	- .28	----
Br. Columbia No. 1 - (5/cage) ---	+ .59	----	- .02	----	+1.09	----
Br. Columbia No. 2 - (5/cage) ---	+ .69	----	+ .02	----	+1.17	----
California No. 1 - Floor-----	----	NR*	----	- .22	----	- .16
Central Canada No. 1 - Floor----	+ .62	+ .62	- .17	- .19	+ .58	+ .83
Central Canada No. 5 - (1/cage)--	----	+ .26	----	- .34	----	+ .52
Florida No. 1 - Floor-----	-1.45	-1.87	+ .29	- .09	- .26	NR*
Florida No. 3 - (2/cage)-----	----	-2.22	----	+ .09	----	NR*
Minnesota No. 1 - Floor-----	+ .03	-2.32	- .26	- .01	+ .59	+ .38
Minnesota No. 4 - (3/cage)-----	- .76	-2.35	- .25	+ .04	+ .80	+ .28
Missouri - Cage (8/cage)-----	+ .21	- .28	- .23	- .21	+ .45	- .32
Missouri - Floor -----	+ .79	+ .32	- .01	+ .36	+ .47	-1.71
New Brunswick No. 2 -----	+1.11	----	- .41	----	- .33	----
New Brunswick No. 3 -----	+ .84	----	- .33	----	- .16	----
New Hampshire No. 2 - (6/cage)--	+1.34	+1.43	+ .02	- .05	- .30	-1.11
New Hampshire No. 4 - (2/cage)--	+ .76	+1.24	- .19	- .05	-1.03	-2.32
New Hampshire No. 6 - Floor----	+ .46	+ .89	- .10	- .12	- .93	-2.50
New Jersey -----	-1.75	-1.38	+ .07	+ .07	+1.79	-1.54
North Carolina No. 2 - Slat-----	+ .44	+1.47	+ .12	+ .20	+1.97	+1.24
North Carolina No. 3-----	+1.09	+1.54	- .11	+ .15	+1.01	+1.09
North Carolina No. 4 - (2/cage) --	+ .65	+1.43	- .13	+ .06	+1.41	+ .91
Pennsylvania -----	- .62	-1.11	+ .14	+ .09	- .20	-1.45
Tennessee No. 1 - (1/cage)-----	+ .24	+ .23	- .07	- .13	+1.01	-1.10
Tennessee No. 2 - (2/cage)-----	+ .29	+ .52	+ .09	+ .15	+ .79	-1.05
Tennessee No. 3 - (1/cage)-----	----	+ .22	----	+ .01	----	-1.30
Tennessee No. 4 - (2/cage)-----	----	+ .48	----	+ .14	----	-1.23
Texas - Cage (2/cage)-----	-1.10	-1.56	+ .26	+ .26	+ .96	NR*
Texas No. 3 - (2/cage)-----	----	-1.59	----	+ .19	----	NR*
Texas No. 4 - (2/cage)-----	----	-1.61	----	+ .13	----	NR*

* Data for this trait not reported.

How Group Rankings Were Determined for Each Trait

The information in this section deals only with the test data obtained during the 1968-69 test year.

The performance of each entry in the 12 Random Sample Egg Production Tests conducted during 1968-69 is reported as the Range Group Rank of the entry for the trait measured. These rankings were determined in the following manner. For each trait the entries in each test were aligned in descending order of performance from the most desirable to the least desirable. The "mean" or average performance for the trait was then determined. All entries above the mean are in range group 1 or 2, and those below the mean are in range group 3 or 4. The dividing point for the entries above or below the mean is the midpoint of the range between the mean and the top or bottom entry. An illustration follows.

Stocks entered in the Missouri floor test had a mean, or average, of 229.74 eggs for the trait "Egg Production per Hen Housed." The highest average number of eggs laid by an entry in this test was 254.70, and the lowest average number laid by an entry was 198.00 eggs. To arrive at the dividing point between the first and second range groups, the mean (229.74) was subtracted from the highest number of eggs (254.70). The result, 24.96 eggs, was divided by two to get the midpoint of the range (12.48 eggs). This was subtracted from the highest number of eggs (254.70 minus 12.48) to arrive at the dividing point (242.22 eggs) between the first and second range groups. To determine the dividing point between the third and fourth range groups, the same procedure was used, except that the lowest average number of eggs (198.00) was subtracted from the mean (229.74). This difference, or range, (31.74 eggs) was then divided by two, and the result (15.87 eggs) was subtracted from the mean (229.74 minus 15.87) to get the dividing point (213.87 eggs) between the third and fourth range groups. These determinations for each trait and test are tabulated in table 4.

The breeders of the stock tested and the Range Group Ranking, by traits, of each entry of the stock are shown in table 5. Each entry is also identified by the abbreviated name of the entrant. If the sample was drawn from a source other than the entrant's hatchery or supply flock, the abbreviated name of the source of the sample is shown in parentheses following the entrant's name.

The listing of the entries in the four range groups, with all entries of each stock in one table, allows the reader to quickly evaluate a stock based on this method of analysis. It should be kept in mind, however, that this method provides just four broad classifications. One-tenth of an egg or one-tenth of a percent difference in mortality could move an entry up or down one Range Group Rank, depending on its place in the range grouping.

Tabular Listing of Stock Entered in Tests

The listing of all stock entered in the 1968-69 Random Sample Egg Production Tests is given in table 6. This listing will permit the reader to see at a glance the abbreviated name of the breeder of the stock, the strain or trade name of the stock, and the total number of entries of each stock which were tested during 1968-69. The tests in which each stock was entered are also given. The full name and address of the breeder can be found in table 1.

Management and Environmental Conditions at Tests

Some of the more important management and environmental conditions found in the individual tests during the 1968-69 testing year are found in table 7. Other conditions at the various testing stations were undoubtedly different. However, the important consideration is that all entries at a given location were treated as nearly alike as possible.

Table 4. --Upper and lower limits for each range group by traits and tests, 1968-69

Traits measured	Tests		
	California	Central Canada	Florida
Income over feed and chick cost;			
Average - - - - dol./hen housed -	2.524	1.814	-----
Range group 1 - - - - -	3.390 - 2.957	2.290 - 2.052	-----
Range group 2 - - - - -	2.956 - 2.524	2.051 - 1.814	-----
Range group 3 - - - - -	2.523 - 1.937	1.813 - 1.537	-----
Range group 4 - - - - -	1.936 - 1.350	1.536 - 1.260	-----
Egg production;			
Average - - - number/hen housed -	247.54	213.81	221.97
Range group 1 - - - - -	273.30 - 260.42	238.80 - 226.30	247.70 - 234.83
Range group 2 - - - - -	260.41 - 247.54	226.29 - 213.81	234.82 - 221.97
Range group 3 - - - - -	247.53 - 232.32	213.80 - 199.05	221.96 - 207.63
Range group 4 - - - - -	232.31 - 217.10	199.04 - 184.30	207.62 - 193.30
Age at 50 percent production;			
Average - - - - - days -	183.3	167.7	160.8
Range group 1 - - - - -	170.0 - 176.6	152.0 - 159.8	154.0 - 157.4
Range group 2 - - - - -	176.7 - 183.3	159.9 - 167.7	157.5 - 160.8
Range group 3 - - - - -	183.4 - 191.6	167.8 - 174.8	160.9 - 165.9
Range group 4 - - - - -	191.7 - 200.0	174.9 - 182.0	166.0 - 171.0
Growing mortality;			
Average - - - - - percent -	0.81	3.17	4.54
Range group 1 - - - - -	0.00 - 0.40	1.30 - 2.23	1.60 - 3.07
Range group 2 - - - - -	0.41 - 0.81	2.24 - 3.17	3.08 - 4.54
Range group 3 - - - - -	0.82 - 2.66	3.18 - 5.18	4.55 - 8.07
Range group 4 - - - - -	2.67 - 4.50	5.19 - 7.20	8.08 - 11.60
Laying mortality;			
Average - - - - - percent -	8.93	16.24	28.10
Range group 1 - - - - -	3.50 - 6.21	7.40 - 11.82	16.00 - 22.05
Range group 2 - - - - -	6.22 - 8.93	11.83 - 16.24	22.06 - 28.10
Range group 3 - - - - -	8.94 - 12.46	16.25 - 22.32	28.11 - 30.70
Range group 4 - - - - -	12.47 - 16.00	22.33 - 28.40	30.71 - 33.30
Egg weight;			
Average - - - - - ounces/dozen -	25.34	25.40	24.96
Range group 1 - - - - -	26.50 - 25.92	27.00 - 26.20	26.60 - 25.78
Range group 2 - - - - -	25.91 - 25.34	26.19 - 25.40	25.77 - 24.96
Range group 3 - - - - -	25.33 - 24.82	25.39 - 24.60	24.95 - 24.13
Range group 4 - - - - -	24.81 - 24.30	24.59 - 23.80	24.12 - 23.30
Large and extra large eggs;			
Average - - - - - percent -	85.08	65.52	70.69
Range group 1 - - - - -	93.90 - 89.49	81.50 - 73.51	84.50 - 77.59
Range group 2 - - - - -	89.48 - 85.08	73.50 - 65.52	77.58 - 70.69
Range group 3 - - - - -	85.07 - 79.54	65.51 - 53.86	70.68 - 61.09
Range group 4 - - - - -	79.53 - 74.00	53.85 - 42.20	61.08 - 51.50
Feed per pound of eggs;			
Average - - - - - pounds -	2.860	2.837	2.545
Range group 1 - - - - -	2.630 - 2.745	2.560 - 2.698	2.360 - 2.452
Range group 2 - - - - -	2.746 - 2.860	2.699 - 2.837	2.453 - 2.545
Range group 3 - - - - -	2.861 - 3.170	2.838 - 2.983	2.546 - 2.777
Range group 4 - - - - -	3.171 - 3.480	2.984 - 3.130	2.778 - 3.010
Albumen quality;			
Average - - - - - Haugh units -	-----	72.92	81.05
Range group 1 - - - - -	-----	79.20 - 76.06	87.10 - 84.07
Range group 2 - - - - -	-----	76.05 - 72.92	84.06 - 81.05
Range group 3 - - - - -	-----	72.91 - 70.76	81.04 - 78.67
Range group 4 - - - - -	-----	70.75 - 68.60	78.66 - 76.30
Blood spots, all sizes;			
Average - - - - - percent -	-----	3.39	5.10
Range group 1 - - - - -	-----	1.20 - 2.29	2.70 - 3.90
Range group 2 - - - - -	-----	2.30 - 3.39	3.91 - 5.10
Range group 3 - - - - -	-----	3.40 - 4.34	5.11 - 7.30
Range group 4 - - - - -	-----	4.35 - 5.30	7.31 - 9.50

Table 4. --Upper and lower limits for each range group by traits and tests, 1968-69-- Continued

Traits measured	Tests		
	Minnesota	Missouri Cage	Missouri Floor
Income over feed and chick cost;			
Average- - - - dol./hen housed -	2.120	2.678	4.013
Range group 1 - - - - -	2.540 - 2.330	3.310 - 2.994	4.750 - 4.381
Range group 2 - - - - -	2.329 - 2.120	2.993 - 2.678	4.380 - 4.013
Range group 3 - - - - -	2.119 - 1.800	2.677 - 1.924	4.012 - 3.491
Range group 4 - - - - -	1.799 - 1.480	1.923 - 1.170	3.490 - 2.970
Egg production;			
Average- - - number/hen housed -	206.80	205.99	229.74
Range group 1 - - - - -	227.90 - 217.35	225.50 - 215.74	254.70 - 242.22
Range group 2 - - - - -	217.34 - 206.80	215.73 - 205.99	242.21 - 229.74
Range group 3 - - - - -	206.79 - 192.45	205.98 - 185.74	229.73 - 213.87
Range group 4 - - - - -	192.44 - 178.10	185.73 - 165.50	213.86 - 198.00
Age at 50 percent production;			
Average- - - - - days -	173.3	185.4	165.5
Range group 1 - - - - -	163.0 - 168.1	173.0 - 179.2	152.0 - 158.7
Range group 2 - - - - -	168.2 - 173.3	179.3 - 185.4	158.8 - 165.5
Range group 3 - - - - -	173.4 - 180.1	185.5 - 190.7	165.6 - 183.2
Range group 4 - - - - -	180.2 - 187.0	190.8 - 196.0	183.3 - 201.0
Growing mortality;			
Average- - - - - percent -	5.51	6.50	4.88
Range group 1 - - - - -	2.10 - 3.80	1.90 - 4.20	0.80 - 2.84
Range group 2 - - - - -	3.81 - 5.51	4.21 - 6.50	2.85 - 4.88
Range group 3 - - - - -	5.52 - 6.71	6.51 - 8.65	4.89 - 8.29
Range group 4 - - - - -	6.72 - 7.90	8.66 - 10.80	8.30 - 11.70
Laying mortality;			
Average- - - - - percent -	13.37	12.43	10.67
Range group 1 - - - - -	8.70 - 11.03	4.40 - 8.41	4.00 - 7.33
Range group 2 - - - - -	11.04 - 13.37	8.42 - 12.43	7.34 - 10.67
Range group 3 - - - - -	13.38 - 16.43	12.44 - 19.91	10.68 - 15.93
Range group 4 - - - - -	16.44 - 19.50	19.92 - 27.40	15.94 - 21.20
Egg weight;			
Average- - - - - ounces/dozen -	25.70	25.83	24.55
Range group 1 - - - - -	26.60 - 26.15	27.10 - 26.46	26.30 - 25.42
Range group 2 - - - - -	26.14 - 25.70	26.45 - 25.83	25.41 - 24.55
Range group 3 - - - - -	25.69 - 25.45	25.82 - 25.06	24.54 - 23.72
Range group 4 - - - - -	25.44 - 25.20	25.05 - 24.30	23.71 - 22.90
Large and extra large eggs;			
Average- - - - - percent -	85.10	88.24	77.25
Range group 1 - - - - -	92.50 - 88.80	95.50 - 91.87	88.60 - 82.92
Range group 2 - - - - -	88.79 - 85.10	91.86 - 88.24	82.91 - 77.25
Range group 3 - - - - -	85.09 - 82.35	88.23 - 81.27	77.24 - 68.12
Range group 4 - - - - -	82.34 - 79.60	81.26 - 74.30	68.11 - 59.00
Feed per pound of eggs;			
Average- - - - - pounds -	2.992	2.927	2.797
Range group 1 - - - - -	2.750 - 2.871	2.570 - 2.748	2.530 - 2.663
Range group 2 - - - - -	2.872 - 2.992	2.749 - 2.927	2.664 - 2.797
Range group 3 - - - - -	2.993 - 3.226	2.928 - 3.388	2.798 - 3.088
Range group 4 - - - - -	3.227 - 3.460	3.389 - 3.850	3.089 - 3.380
Albumen quality;			
Average- - - - - Haugh units -	86.31	79.81	78.48
Range group 1 - - - - -	91.10 - 88.70	85.80 - 82.80	82.80 - 80.64
Range group 2 - - - - -	88.69 - 86.31	82.79 - 79.81	80.63 - 78.48
Range group 3 - - - - -	86.30 - 84.45	79.80 - 77.10	78.47 - 75.64
Range group 4 - - - - -	84.44 - 82.60	77.09 - 74.40	75.63 - 72.80
Blood spots, all sizes;			
Average- - - - - percent -	3.77	4.56	3.33
Range group 1 - - - - -	1.00 - 2.38	2.60 - 3.58	1.60 - 2.46
Range group 2 - - - - -	2.39 - 3.77	3.59 - 4.56	2.47 - 3.33
Range group 3 - - - - -	3.78 - 6.03	4.57 - 6.18	3.34 - 4.26
Range group 4 - - - - -	6.04 - 8.30	6.19 - 7.80	4.27 - 5.20

Table 4. --Upper and lower limits for each range group by traits and tests, 1968-69-- Continued

Traits measured	Tests		
	New Hampshire	New Jersey	North Carolina
Income over feed and chick cost;			
Average- - - - dol./hen housed -	4,193	4,061	1,281
Range group 1 - - - - -	4,630 - 4,411	3,070 - 4,381	1,900 - 1,590
Range group 2 - - - - -	4,410 - 4,193	4,380 - 4,061	1,589 - 1,281
Range group 3 - - - - -	4,192 - 3,916	4,060 - 3,745	1,280 - 0,845
Range group 4 - - - - -	3,915 - 3,640	3,744 - 3,430	0,844 - 0,410
Egg production;			
Average- - - number/hen housed -	195.08	239.49	201.68
Range group 1 - - - - -	212.90 - 203.99	262.90 - 251.19	219.60 - 210.64
Range group 2 - - - - -	203.98 - 195.08	251.18 - 239.49	210.63 - 201.68
Range group 3 - - - - -	195.07 - 184.44	239.48 - 228.49	201.67 - 184.24
Range group 4 - - - - -	184.43 - 173.80	228.48 - 217.50	184.23 - 166.80
Age at 50 percent production;			
Average- - - - - days -	172.3	164.5	174.4
Range group 1 - - - - -	163.0 - 167.6	152.0 - 158.2	163.0 - 168.7
Range group 2 - - - - -	167.7 - 172.3	158.3 - 164.5	168.8 - 174.4
Range group 3 - - - - -	172.4 - 175.6	164.6 - 172.2	174.5 - 179.7
Range group 4 - - - - -	175.7 - 179.0	172.3 - 180.0	179.8 - 185.0
Growing mortality;			
Average- - - - - percent -	8.26	3.63	6.73
Range group 1 - - - - -	3.60 - 5.93	1.80 - 2.71	2.20 - 4.46
Range group 2 - - - - -	5.94 - 8.26	2.72 - 3.63	4.47 - 6.73
Range group 3 - - - - -	8.27 - 14.33	3.64 - 6.36	6.74 - 10.86
Range group 4 - - - - -	14.34 - 20.40	6.37 - 9.10	10.87 - 15.00
Laying mortality;			
Average- - - - - percent -	18.98	9.00	19.60
Range group 1 - - - - -	8.40 - 13.69	2.00 - 5.50	11.10 - 15.35
Range group 2 - - - - -	13.70 - 18.98	5.51 - 9.00	15.36 - 19.60
Range group 3 - - - - -	18.99 - 24.09	9.01 - 12.50	19.61 - 24.95
Range group 4 - - - - -	24.10 - 29.20	12.51 - 16.00	24.96 - 30.30
Egg weight;			
Average- - - - - ounces/dozen -	25.79	25.25	27.06
Range group 1 - - - - -	27.20 - 26.49	26.00 - 25.62	28.70 - 27.88
Range group 2 - - - - -	26.48 - 25.79	25.61 - 25.25	27.87 - 27.06
Range group 3 - - - - -	25.78 - 25.24	25.24 - 24.92	27.05 - 26.13
Range group 4 - - - - -	25.23 - 24.70	24.91 - 24.60	26.12 - 25.20
Large and extra large eggs;			
Average- - - - - percent -	80.28	67.77	92.02
Range group 1 - - - - -	91.70 - 85.99	77.50 - 72.63	96.80 - 94.41
Range group 2 - - - - -	85.98 - 80.28	72.62 - 67.77	94.40 - 92.02
Range group 3 - - - - -	80.27 - 74.24	67.76 - 61.83	92.01 - 86.26
Range group 4 - - - - -	74.23 - 68.20	61.82 - 55.90	86.25 - 80.50
Feed per pound of eggs;			
Average- - - - - pounds -	3.062	2.717	2,624
Range group 1 - - - - -	2,550 - 2,806	2,540 - 2,628	2,420 - 2,522
Range group 2 - - - - -	2,807 - 3,062	2,629 - 2,717	2,523 - 2,624
Range group 3 - - - - -	3,063 - 3,306	2,718 - 2,808	2,625 - 2,812
Range group 4 - - - - -	3,307 - 3,550	2,809 - 2,900	2,813 - 3,000
Albumen quality;			
Average- - - - - Haugh units -	69.88	82.85	74,29
Range group 1 - - - - -	75.40 - 72.64	86.90 - 84.87	79.90 - 77.09
Range group 2 - - - - -	72.63 - 69.88	84.86 - 82.85	77.08 - 74.29
Range group 3 - - - - -	69.87 - 67.99	82.84 - 81.12	74.28 - 72.04
Range group 4 - - - - -	67.98 - 66.10	81.11 - 79.40	72.03 - 69.80
Blood spots, all sizes;			
Average- - - - - percent -	3.07	2.08	3.64
Range group 1 - - - - -	0.70 - 1.88	0.80 - 1.44	1.20 - 2.42
Range group 2 - - - - -	1.89 - 3.07	1.45 - 2.08	2.43 - 3.64
Range group 3 - - - - -	3.08 - 4.43	2.09 - 2.99	3.65 - 5.07
Range group 4 - - - - -	4.44 - 5.80	3.00 - 3.90	5.08 - 6.50

Table 4.--Upper and lower limits for each range group by traits and tests, 1968-69--Continued

Traits measured	Tests		
	Pennsylvania	Tennessee	Texas
Income over feed and chick cost;			
Average- - - - dol./hen housed -	3.714	3.503	-----
Range group 1 - - - - -	4.790 - 4.252	4.320 - 3.911	-----
Range group 2 - - - - -	4.251 - 3.714	3.910 - 3.503	-----
Range group 3 - - - - -	3.713 - 2.907	3.502 - 2.816	-----
Range group 4 - - - - -	2.906 - 2.100	2.815 - 2.130	-----
Egg production;			
Average- - - number/hen housed -	244.50	210.77	204.95
Range group 1 - - - - -	275.10 - 259.80	235.70 - 223.23	223.30 - 214.12
Range group 2 - - - - -	259.79 - 244.50	223.22 - 210.77	214.11 - 204.95
Range group 3 - - - - -	244.49 - 227.40	210.76 - 194.63	204.94 - 195.27
Range group 4 - - - - -	227.39 - 210.30	194.62 - 178.50	195.26 - 185.60
Age at 50 percent production;			
Average- - - - - days -	160.7	164.3	178.3
Range group 1 - - - - -	153.0 - 156.8	155.0 - 159.6	169.0 - 173.6
Range group 2 - - - - -	156.9 - 160.7	159.7 - 164.3	173.7 - 178.3
Range group 3 - - - - -	160.8 - 163.8	164.4 - 168.6	178.4 - 183.1
Range group 4 - - - - -	163.9 - 167.0	168.7 - 173.0	183.2 - 188.0
Growing mortality;			
Average- - - - - percent -	3.36	11.48	11.16
Range group 1 - - - - -	0.80 - 2.08	3.30 - 7.39	7.10 - 9.13
Range group 2 - - - - -	2.09 - 3.36	7.40 - 11.48	9.14 - 11.16
Range group 3 - - - - -	3.37 - 5.28	11.49 - 16.64	11.17 - 14.18
Range group 4 - - - - -	5.29 - 7.20	16.65 - 21.80	14.19 - 17.20
Laying mortality;			
Average- - - - - percent -	7.70	18.07	15.13
Range group 1 - - - - -	3.00 - 5.35	4.50 - 11.28	10.70 - 12.91
Range group 2 - - - - -	5.36 - 7.70	11.29 - 18.07	12.92 - 15.13
Range group 3 - - - - -	7.71 - 13.35	18.08 - 23.48	15.14 - 18.36
Range group 4 - - - - -	13.36 - 19.00	23.49 - 28.90	18.37 - 21.60
Egg weight;			
Average- - - - ounces/dozen -	25.83	24.51	25.15
Range group 1 - - - - -	28.20 - 27.01	25.50 - 25.00	25.80 - 25.47
Range group 2 - - - - -	27.00 - 25.83	24.99 - 24.51	25.46 - 25.15
Range group 3 - - - - -	25.82 - 25.21	24.50 - 23.50	25.14 - 24.72
Range group 4 - - - - -	25.20 - 24.60	23.49 - 22.50	24.71 - 24.30
Large and extra large eggs;			
Average- - - - - percent -	71.26	66.91	-----
Range group 1 - - - - -	89.50 - 80.38	77.90 - 72.40	-----
Range group 2 - - - - -	80.37 - 71.26	72.39 - 66.91	-----
Range group 3 - - - - -	71.25 - 64.03	66.90 - 55.35	-----
Range group 4 - - - - -	64.02 - 56.80	55.34 - 43.80	-----
Feed per pound of eggs;			
Average- - - - - pounds -	2.600	2.932	2.690
Range group 1 - - - - -	2.300 - 2.450	2.600 - 2.766	2.530 - 2.610
Range group 2 - - - - -	2.451 - 2.600	2.767 - 2.932	2.611 - 2.690
Range group 3 - - - - -	2.601 - 2.905	2.933 - 3.226	2.691 - 2.820
Range group 4 - - - - -	2.906 - 3.210	3.227 - 3.520	2.821 - 2.950
Albumen quality;			
Average- - - - - Haugh units -	76.78	75.65	81.26
Range group 1 - - - - -	83.00 - 79.89	81.30 - 78.47	85.60 - 83.43
Range group 2 - - - - -	79.88 - 76.78	78.46 - 75.65	83.42 - 81.26
Range group 3 - - - - -	76.77 - 73.99	75.64 - 73.22	81.25 - 79.93
Range group 4 - - - - -	73.98 - 71.20	73.21 - 70.80	79.92 - 78.60
Blood spots, all sizes;			
Average- - - - - percent ✓	2.83	3.46	3.50
Range group 1 - - - - -	0.40 - 1.61	1.20 - 2.33	0.90 - 2.20
Range group 2 - - - - -	1.62 - 2.83	2.34 - 3.46	2.21 - 3.50
Range group 3 - - - - -	2.84 - 4.41	3.47 - 5.48	3.51 - 5.50
Range group 4 - - - - -	4.42 - 6.00	5.49 - 7.50	5.51 - 7.50

Table 5. --Range group ranking for stock entered in 1968-69 random sample egg production tests

ENTRY IDENTIFICATION	TEST	BREEDING	STRAIN OR TRADENAME	INCOME OVER FEED AND CHICK COST (\$)	EGG PRO- DUCTION (No.)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (g)	LARGE AND EXTRA LARGE EGGS (%)	FEED PER POUND OF EGGS (lb.)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
Animal Research Institute, Ottawa, Ontario													
A.R.I., Ont. -----	C.C.	WL	PS	Kentville R. B.C. -- 4	4	4	2	2	3	3	4	3	3
Anthony, Geo. M. & Sons, Strausstown, Pennsylvania													
Anthony, Pa. -----	Minn.	WL	SX	Anthony-----	3	3	3	2	2	2	3	1	3
Anthony, Pa. -----	Mo.-C.	WL	SX	Anthony-----	3	3	2	3	2	2	3	1	2
Anthony, Pa. -----	Mo.-F.	WL	SX	Anthony-----	2	3	2	2	3	2	1	1	2
Anthony, Pa. -----	N.J.	WL	SX	Anthony-----	2	4	1	1	2	1	3	2	3
Anthony, Pa. -----	Pa.	WL	SX	Anthony-----	2	4	3	3	3	3	1	1	1
Anthony, Pa. -----	Tenn.	WL	SX	Anthony-----	3	4	3	3	2	2	3	1	2
Babcock Poultry Farm, Inc., Ithaca, New York													
Babcock, N.Y. -----	Calif.	WL	SX	Babcock B-300 ----	2	1	3	2	3	2	2	4	4
Babcock, N.Y. (Mallett's, Ont.) -----	C.C.	WL	SX	Babcock B-300 ----	2	2	3	2	2	2	2	4	2
Babcock, N.Y. (Gulf Coast, Hodges, Fla.)	Fla.	WL	SX	Babcock B-300 ----	1	1	3	3	2	2	1	3	2
Babcock, N.Y. (Dr. Kerrs, Minn.) -----	Minn.	WL	SX	Babcock B-300 ----	1	1	3	1	4	3	1	4	3
Babcock, N.Y. (Ballew, Mo.) -----	Mo.-C.	WL	SX	Babcock B-300 ----	1	2	2	3	3	3	1	2	2
Babcock, N.Y. (Ballew, Mo.) -----	Mo.-F.	WL	SX	Babcock B-300 ----	1	1	4	3	3	3	1	3	2
Babcock, N.Y. (Babcock, Pa.) -----	N.H.	WL	SX	Babcock B-300 ----	1	1	1	2	3	3	1	4	2
Babcock, N.Y. (Harrold's, Ga.) -----	N.C.	WL	SX	Babcock B-300 ----	1	1	4	3	3	3	1	3	3
Babcock, N.Y. (Babcock, Pa.) -----	Pa.	WL	SX	Babcock B-300 ----	1	1	3	1	3	2	1	4	2
Babcock, N.Y. (Pinckard, Tenn.) -----	Tenn.	WL	SX	Babcock B-300 ----	1	1	2	2	3	2	1	4	2
Babcock, N.Y. (Center, Texas) -----	Texas	WL	SX	Babcock B-300 ----	1	2	2	1	3	1	1	2	3
Babcock Poultry Farm, Inc., Ithaca, New York													
Babcock, N.Y. -----	Mo.-F.	WL	SX	Babcock B-305 ----	1	1	2	1	3	3	1	3	3
Babcock, N.Y. -----	N.H.	WL	SX	Babcock B-305 ----	1	1	4	3	3	3	1	3	2
Babcock, N.Y. (Babcock, Pa.) -----	Pa.	WL	SX	Babcock B-305 ----	1	1	1	1	4	3	1	4	2
Babcock, N.Y. -----	Texas	WL	SX	Babcock B-305 ----	2	2	1	3	2	2	2	3	3
Babcock Poultry Farm, Inc., Ithaca, New York													
Babcock, N.Y. -----	N.H.	RIRxBPR	BX	Babcock B-390 ----	3	3	1	3	2	2	3	2	4
Babcock, N.Y. -----	Pa.	RIRxBPR	BX	Babcock B-390 ----	4	3	2	3	2	1	4	3	3
Brender's Leghorns, Ferndale, New York													
Brender's, N.Y. (Minnesota, Minn.) -----	Minn.	WL	SX	Money Maker-----	4	4	3	2	2	2	4	2	1
Burling Hatchery, Oxford, Pennsylvania													
Burling, Pa. -----	Pa.	RIRxWPR	BX	Golden Tri-Cross--	3	4	3	3	2	2	3	3	4

Table 5. --Range group ranking for stock entered in 1968-69 random sample egg production tests--Continued

ENTRY IDENTIFICATION			TEST	BREEDING	STRAIN OR TRADE NAME	INCOME OVER FEED COST (Chick)	EGG PRO- DUCTION (No.)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE AND EXTRA LARGE EGGS (%)	TEEN PER 1000 (lbs)	ALBUMEN QUALITY (H. U.)	BLOOD SPOTS (%)
Cameron Leghorn Res. Farm, Beaver Springs, Pennsylvania															
Cameron, Pa.	-----	Pa.	WL	SX	Cameron #924	-----2	2	4	2	1	4	3	3	2	4
Carey Farms, Marion, Ohio	-----														
Carey, Ohio	-----	Tenn.	CGxWL	BX	Carey New Spots	---3	3	3	4	3	3	3	3	3	2
Carey Farms, Marion, Ohio	-----														
Carey, Ohio	-----	Mo.-F.	WL	IN	Carey's New Nick	--2	2	2	2	3	3	3	2	3	2
Carey, Ohio	-----	Pa.	WL	IN	Carey's New Nick	--1	1	3	2	1	4	4	2	2	2
Cashman Leghorn Farms, Webster, Kentucky	-----														
Cashman, Ky.	-----	Mo.-C.	Syn. xWL	INX	Cashman Astronauts	2	3	4	2	2	3	2	2	3	3
Cashman, Ky.	-----	Mo.-F.	Syn. xWL	INX	Cashman Astronauts	2	2	3	3	1	2	2	2	2	1
Cashman Leghorn Farms, Webster, Kentucky	-----														
Cashman, Ky.	-----	C.C.	WL	IN	Cashman Hi-Cash	--2	1	3	2	1	2	2	3	3	4
Cashman, Ky.	-----	Fla.	WL	IN	Cashman Hi-Cash	--	3	4	2	3	2	2	3	2	3
Cashman, Ky.	-----	Minn.	WL	IN	Cashman Hi-Cash	--2	2	3	2	1	3	3	2	3	4
Cashman, Ky.	-----	Mo.-C.	WL	IN	Cashman Hi-Cash	--2	3	4	4	2	3	2	2	2	4
Cashman, Ky.	-----	Mo.-F.	WL	IN	Cashman Hi-Cash	--2	2	1	2	4	3	3	2	3	3
Cashman, Ky.	-----	N.J.	WL	IN	Cashman Hi-Cash	--4	4	2	1	3	3	2	4	3	2
Cashman, Ky.	-----	N.C.	WL	IN	Cashman Hi-Cash	--3	3	4	3	3	2	1	2	2	1
Cashman, Ky.	-----	Tenn.	WL	IN	Cashman Hi-Cash	--3	2	3	4	2	2	3	3	2	3
Colonial Poultry Farms, Pleasant Hill, Missouri	-----														
Colonial, Mo. (Colonial, Minn.)	-----	Minn.	WL	IN	True-Line 365 B	---3	3	2	2	3	4	4	2	3	3
Colonial, Mo. (Colonial Res., Mo.)	-----	Mo.-C.	WL	IN	True-Line 365 B	---2	1	1	1	3	4	4	1	2	2
Colonial, Mo.	-----	Mo.-F.	WL	IN	True-Line 365 B	---2	2	1	2	2	3	3	1	2	3
Colonial, Mo.	-----	N.H.	WL	IN	True-Line 365 B	---2	2	2	3	4	4	4	2	3	3
Colonial, Mo.	-----	N.J.	WL	IN	True-Line 365 B	---4	4	2	1	4	2	3	3	3	4
Colonial Poultry Farms, Pleasant Hill, Missouri	-----														
Colonial, Mo.	-----	Fla.	---	INX	True-Line 365 H	---	4	1	3	4	3	3	2	2	3
Davis, Joe K., Hatchery, Earl, North Carolina	-----														
Davis, N.C.	-----	Mo.-F.	RIRxBPR	BX	Davis Combiner	-----4	4	3	3	2	2	2	4	3	4
Davis, N.C.	-----	N.C.	RIRxBPR	BX	Davis Combiner	-----3	3	3	2	2	2	2	4	4	4
Davis, Joe K., Hatchery, Earl, North Carolina	-----														
Davis, N.C.	-----	Calif.	RIR	SX	Davis Red	-----1	3	4	2	2	1	1	3	3	4
Davis, N.C.	-----	Minn.	RIR	SX	Davis Red	-----4	4	3	2	1	2	2	4	3	4
Davis, N.C.	-----	Mo.-F.	RIR	SX	Davis Red	-----4	4	3	2	4	2	2	4	3	3
Davis, N.C.	-----	N.H.	RIR	SX	Davis Red	-----2	2	4	1	1	3	2	3	3	3
Davis, N.C.	-----	N.C.	RIR	SX	Davis Red	-----2	1	3	1	1	3	2	3	3	3
Davis, N.C.	-----	Pa.	RIR	SX	Davis Red	-----3	3	4	4	1	1	2	4	2	4

Table 5. --Range group ranking for stock entered in 1968-69 random sample egg production tests--Continued

ENTRY IDENTIFICATION	TEST	BREEDING	STRAIN OR TRADENAME	INCOME OVER FEED COST (\$)	EGG PRO- DUCTION (No.)	AGE AT 50% PRO- DUCTION (Days)	MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE AND EXTRA LARGE EGGS (%)	FEED PER EGG (lbs)	ALBUMEN QUALITY (H.U.)	SPOTS BLDOD (%)
Demler Farms, Inc., Anaheim, California													
Demler, Calif.-----	Calif.	WL	SX	Demler D-65-----	2	3	3	2	1	2	2	2	
deZeeuw Leghorn Breeder, South Edmonton, Alberta													
deZeeuw, Alta.-----	C.C.	WL	SX	deZeeuw 752-----	4	4	4	2	3	2	4	3	3
Erath Egg Farm, Stephenville, Texas													
Erath, Texas-----	Mo.-C.	---	INX	Erath Mestiza-----	1	1	2	3	2	3	1	3	3
Erath, Texas-----	Texas	---	INX	Erath Mestiza-----		4	2	4	4	4	3	3	2
Fisher Poultry Farm, Ltd., Aytton, Ontario													
Fisher, Ont.-----	C.C.	WL	SX	Fisher 105-----	4	4	3	4	4	3	2	1	2
Garber Poultry Breeding Farm, Modesto, California													
Garber, Calif.-----	Calif.	WL	SX	Garber G 200-----	2	2	2	1	1	3	2	2	
Garber, Calif. (Orange Blossom, Fla.)---	Fla.	WL	SX	Garber G 200-----	4	4	3	3	4	2	3	1	1
Garber, Calif.-----	Minn.	WL	SX	Garber G 200-----	2	2	3	3	2	4	2	1	2
Garber, Calif.-----	Mo.-F.	WL	SX	Garber G 200-----	2	2	3	2	2	3	2	1	1
Garber, Calif. (Garber, N.J.)-----	N.H.	WL	SX	Garber G 200-----	4	4	3	1	3	4	3	1	1
Garber, Calif.-----	Pa.	WL	SX	Garber G 200-----	1	2	3	2	1	4	3	1	2
Garber, Calif.-----	Texas	WL	SX	Garber G 200-----		3	2	4	2	3	4	1	1
Garber Poultry Breeding Farm, Modesto, California													
Garber, Calif.-----	Calif.	CGxWL	BX	Garber G x 291-----	3	3	1	1	4	3	2		
Garber, Calif.-----	Mo.-C	CGxWL	BX	Garber G x 291-----	2	3	1	2	2	3	2	3	1
Garber, Calif. (Davis, N.C.)-----	N.C.	CGxWL	BX	Garber G x 291-----	2	2	1	2	1	3	2	3	1
Garber, Calif.-----	Pa.	CGxWL	BX	Garber G x 291-----	3	3	2	2	3	4	3	4	1
Garber, Calif.-----	Tenn.	CGxWL	BX	Garber G x 291-----	3	3	1	3	2	3	3	2	1
Garrison, Earl W., Bridgeton, New Jersey													
Garrison, N.J.-----	N.J.	WL	SX	Garrison Leghorn -	2	3	4	2	3	3	3	1	1
Garrison, Earl W., Bridgeton, New Jersey													
Garrison, N.J.-----	Pa.	RIRxWPR	BX	Golden Sex Link----	4	3	2	3	2	2	1	4	4
Ghostley Enterprises, Inc., Anoka, Minnesota													
Ghostley, Minn.-----	Minn.	WL	SX	Ghostley Pearl-----	1	2	2	2	3	2	1	3	2
Ghostley, Minn.-----	N.J.	WL	SX	Ghostley Pearl-----	2	2	2	1	1	2	2	3	3
Ghostley, Minn.-----	Pa.	WL	SX	Ghostley Pearl-----	1	1	1	3	1	4	3	1	1
Ghostley, Minn.-----	Texas	WL	SX	Ghostley Pearl-----		1	1	4	1	2	1	1	3

Table 5.--Range group ranking for stock entered in 1968-69 random sample egg production tests--Continued

ENTRY IDENTIFICATION		TEST	BREEDING	STRAIN OR TRADENAME	INCOME OVER FEED COST (\$)	EGG PRO- DUCTION (Hen housed)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE AND EXTRA LARGE (%)	FEED PER EGG (lbs)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
Harco Orchards & Poultry Farms, South Easton Massachusetts														
Harco, Mass.	-----	Mo.-F.	RIRxBPR	BX	Harco Sex Link----	3	3	2	4	1	1	3	2	4
Harco, Mass.	-----	N.H.	RIRxBPR	BX	Harco Sex Link----	3	4	3	3	1	1	3	2	2
Arbor Acres, Conn. (Arbor Acres, N.C.)	-----	N.C.	RIRxBPR	BX	Harco Sex Link----	3	1	3	1	1	1	3	2	3
Harco, Mass.	-----	Pa.	RIRxBPR	BX	Harco Sex Link----	4	4	1	1	1	1	4	2	4
Hardy, C. Nelson & Sons, Essex, Massachusetts	-----	N.H.	RIRxBPR	BX	Deluxe Sex Link----	4	4	1	2	1	2	4	3	1
Heisdorf & Nelson Farms, Redmond, Washington	-----	Calif.	WL	SX	H & N Nick Chick--	2	3	1	1	2	2	1		
H & N, Wash. (H & N, Calif.)	-----	Calif.	WL	SX	Honegger Layer ---	1	1	1	1	2	2	2	2	3
Honegger Farms Co., Inc., Forrest, Illinois	-----	Fla.	WL	SX	Honegger Layer ---	1	1	1	1	2	2	2	2	3
Honegger, Ill. (Browder's, Pine Air, Fla.)	-----	Fla.	WL	SX	Honegger Layer ---	1	1	1	1	2	2	2	2	3
Hubbard Farms, Inc., Walpole, New Hampshire	-----	C.C.	Syn.xNH	BX	Golden Comet-----	3	2	1	3	1	1	3	2	4
Hubbard, N.H. (Cook's, N.S.)	-----	N.H.	Syn.xNH	BX	Golden Comet-----	3	1	2	2	1	1	3	2	4
Hubbard, N.H.	-----	N.C.	Syn.xNH	BX	Golden Comet-----	3	2	1	3	1	1	2	2	3
Hubbard, N.H. (Hubbard, N.C.)	-----	Pa.	Syn.xNH	BX	Golden Comet-----	3	1	1	4	1	1	3	2	4
Hubbard, N.H. (Hubbard, Pa.)	-----	Pa.	Syn.xNH	BX	Golden Comet-----	3	1	1	4	1	1	3	2	4
Hy-Line Poultry Farm, Des Moines, Iowa	-----	Calif.	---	INX	Hy-Line 934 -----	2	3	2	1	1	1	1		
Hy-Line, Iowa (Poehlmann, Calif.)	-----	Calif.	---	INX	Hy-Line 934 -----	2	3	3	3	1	1	1	4	2
Hy-Line, Iowa (Hy-Line, Minn.)	-----	Minn.	---	INX	Hy-Line 934 -----	3	3	3	2	1	1	1	4	3
Hy-Line, Iowa (Hy-Line, Iowa)	-----	Mo.-F.	---	INX	Hy-Line 934 -----	3	3	3	2	1	1	1	4	3
Hy-Line Poultry Farm, Des Moines, Iowa	-----	C.C.	---	INX	Hy-Line 934-E-----	3	4	3	3	1	1	2	4	3
Hy-Line, Iowa (Hy-Line, Ont.)	-----	Fla.	---	INX	Hy-Line 934-E-----	2	3	1	2	2	2	1	4	1
Hy-Line, Iowa (Wallace, Fla.)	-----	Mo.-C.	---	INX	Hy-Line 934-E-----	1	3	2	1	1	1	1	4	2
Hy-Line, Iowa (Hy-Line, Minn.)	-----	N.C.	---	INX	Hy-Line 934-E-----	4	3	3	3	1	1	2	4	1
Hy-Line, Iowa (Wallace, Fla.)	-----	Texas	---	INX	Hy-Line 934-E-----	4	4	2	4	1		3	4	2
Hy-Lay, Texas	-----	Texas	---	INX	Hy-Line 934-E-----	4	4	2	4	1		3	4	2
Hy-Line Poultry Farm, Des Moines, Iowa	-----	Fla.	---	INX	Hy-Line 934-J-----	2	3	1	2	1	1	1	4	2
Hy-Line, Iowa (Wallace, Fla.)	-----	Fla.	---	INX	Hy-Line 934-J-----	2	3	1	2	1	1	1	4	2
Hy-Line Poultry Farm, Des Moines, Iowa	-----	Calif.	---	INX	Hy-Line 938 -----	3	2	2	3	1	1	1		
Hy-Line, Iowa (Poehlmann, Calif.)	-----	Calif.	---	INX	Hy-Line 938 -----	1	1	3	3	2	2	1	4	1
Hy-Line, Iowa (Hy-Line, Iowa)	-----	Mo.-C.	---	INX	Hy-Line 938 -----	3	2	3	2	2	2	2	4	1
Hy-Line, Iowa	-----	Mo.-F.	---	INX	Hy-Line 938 -----	1	2	1	2	1	1	1	4	2
Hy-Line, Iowa (Smith, Tenn.)	-----	Tenn.	---	INX	Hy-Line 938 -----	1	2	1	2	1	1	1	4	2
Hy-Line, Iowa (Hy-Lay, Texas)	-----	Texas	---	INX	Hy-Line 938 -----	2	3	4	3	1	1	1	4	1
Kazmeier, Texas	-----	Texas	---	INX	Hy-Line 938 -----	2	3	2	3	1	1	1	4	1

Table 5. --Range group ranking for stock entered in 1968-69 random sample egg production tests--Continued

ENTRY IDENTIFICATION		TEST	BREEDING	STRAIN OR TRADENAME	INCOME OVER FEED AND CHICK COST (\$)	EGG PRO- DUCTION (No.)	AGE AT 90% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE AND EXTRA LARGE EGGS (%)	FEED PER POUND OF EGGS (lbs)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
Ideal Poultry Breeding Farm, Inc., Cameron, Texas														
Ideal, Texas	-----	Calif.	Syn.xWL BX	Ideal 236	-----	3	4	1	3	3	2	3		
Ideal, Texas	-----	Mo.-C.	Syn.xWL BX	Ideal 236	-----	1	2	1	2	2	2	1	3	1
Ideal, Texas	-----	Mo.-F.	Syn.xWL BX	Ideal 236	-----	1	3	1	1	3	3	1	3	2
Ideal, Texas	-----	N.C.	Syn.xWL BX	Ideal 236	-----	1	3	1	1	2	1	1	4	1
Ideal, Texas	-----	Pa.	Syn.xWL BX	Ideal 236	-----	2	2	2	3	1	1	2	3	3
Ideal, Texas	-----	Texas	Syn.xWL BX	Ideal 236	-----	3	3	2	1	2		3	2	2
Indiana Farm Bureau Coop., Indianapolis, Indiana														
Ind. Farm Bur., Ind. (Mettlings, Minn.)	-----	Minn.	WL	Princess 55	-----	3	4	2	4	3	2	4	1	3
Ind. Farm Bur., Ind.	-----	Mo.-C.	WL	Princess 55	-----	2	4	4	2	2	2	2	1	1
Ind. Farm Bur., Ind.	-----	N.C.	WL	Princess 55	-----	2	3	3	3	3	3	1	1	2
Indiana Farm Bureau Coop., Indianapolis, Indiana														
Ind. Farm Bur., Ind.	-----	Mo.-C.	WL	Duchess 60	-----	3	3	4	3	3	2	3	1	4
Ind. Farm Bur., Ind.	-----	Mo.-F.	WL	Duchess 60	-----	1	2	3	2	2	2	2	1	2
Ind. Farm Bur., Ind.	-----	Pa.	WL	Duchess 60	-----	2	4	3	3	3	3	1	1	1
Jacobson Hatchery, Hartley, Iowa														
Jacobson, Iowa	-----	Minn.	WL	Basketfillers	-----	4	2	4	2	4	4	3	3	2
Jacobson, Iowa	-----	Mo.-F.	WL	Basketfillers	-----	3	1	1	2	3	3	3	3	2
Kimber Farms, Inc., Fremont, California														
Kimber, Calif.	-----	Calif.	WL	Kimber K 137	-----	2	2	2	2	4	3	1		
Kimber, Calif. (Scott, Ont.)	-----	C.C.	WL	Kimber K 137	-----	3	2	1	3	3	3	3	1	2
Kimber, Calif. (Fla. State, Miami Int., Fla.)	-----	Fla.	WL	Kimber K 137	-----	2	2	2	3	3	3	2	1	1
Kimber, Calif.	-----	N.H.	WL	Kimber K 137	-----	2	2	3	2	4	3	2	1	3
Kimber, Calif. (Rapp, N.J.)	-----	N.J.	WL	Kimber K 137	-----	2	2	3	4	4	4	2	1	3
Kimber, Calif. (Nichols, Tenn.)	-----	N.C.	WL	Kimber K 137	-----	2	2	3	3	3	3	2	1	2
Kimber, Calif. (Moyer's, Pa.)	-----	Pa.	WL	Kimber K 137	-----	2	2	2	1	3	3	1	1	1
Kimber Farms, Inc., Fremont, California														
Kimber, Calif.	-----	Calif.	WL	Kimber K 141	-----	3	3	3	2	3	2	2		
Kimber, Iowa	-----	Minn.	WL	Kimber K 141	-----	1	3	4	3	4	3	1	2	2
Kimber, Calif. (Mo. Valley, Mo.)	-----	Mo.-F.	WL	Kimber K 141	-----	1	2	2	3	3	2	1	2	3
Kimber, Calif.	-----	N.H.	WL	Kimber K 141	-----	2	2	2	4	4	4	2	4	1
Kimber, Calif. (Longenecker's, Pa.)	-----	N.J.	WL	Kimber K 141	-----	3	3	3	3	2	2	3	4	3
Kimber, Calif. (Nichols, Tenn.)	-----	N.C.	WL	Kimber K 141	-----	2	3	3	3	3	3	2	3	4
Kimber, Calif. (Longenecker's, Pa.)	-----	Pa.	WL	Kimber K 141	-----	3	4	3	3	3	4	3	4	3
Kimber, Calif. (Nichols, Tenn.)	-----	Tenn.	WL	Kimber K 141	-----	3	2	2	4	3	3	2	3	2
Kimber, Calif.	-----	Texas	WL	Kimber K 141	-----	3	2	2	3	4	3	3	3	3

Table 5.--Range group ranking for stock entered in 1968-69 random sample egg production tests--Continued

ENTRY IDENTIFICATION	TEST	BREEDING	STRAIN OR TRADENAME	INCOME OVER FEED AND CHICK COST (\$)	EGG PRO- DUCTION (No.)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE AND EXTRA LARGE EGGS (%)	FEED PER EGG (lbs)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
Kimber Farms, Inc., Fremont, California													
Kimber, Calif.-----	Calif.	WL	SX	Kimber K 155-----	3	1	3	4	4	3	2		
Kimber, Calif. (Mo. Valley, Mo.)-----	Mo.-F.	WL	SX	Kimber K 155-----	3	2	2	3	4	3	3	1	3
Lawton, A. C. & Sons, Foxboro, Massachusetts													
Lawton, Mass.-----	Mo.-C.	RIRxWPR	BX	Buff Sex Link-----	4	4	1	1	1	1	4	2	4
Lawton, Mass.-----	Mo.-F.	RIRxWPR	BX	Buff Sex Link-----	4	2	4	3	1	1	4	2	4
Lawton, Mass.-----	N.H.	RIRxWPR	BX	Buff Sex Link-----	4	4	2	3	1	1	4	2	3
Lawton, Mass.-----	Pa.	RIRxWPR	BX	Buff Sex Link-----	4	4	1	3	1	1	4	2	4
North Central Regional Poultry Br. Lab., Lafayette, Indiana													
N.C. Reg. Pity., Ind.-----	Calif.	WL	PS	Reg. Cornell Contr. 3	3	4	3	3	4	4	3		4
N.C. Reg. Pity., Ind.-----	Fla.	WL	PS	Reg. Cornell Contr.	4	4	4	3	4	4	4	2	4
N.C. Reg. Pity., Ind.-----	Mo.-C.	WL	PS	Reg. Cornell Contr. 4	3	4	4	2	4	4	4	3	3
N.C. Reg. Pity., Ind.-----	Mo.-F.	WL	PS	Reg. Cornell Contr. 4	4	3	2	2	4	4	4	3	4
N.C. Reg. Pity., Ind.-----	N.C.	WL	PS	Reg. Cornell Contr. 4	4	4	4	4	4	4	4	3	4
N.C. Reg. Pity., Ind.-----	Tenn.	WL	PS	Reg. Cornell Contr. 4	4	4	2	4	4	4	4	2	4
North Central Regional Poultry Br. Lab., Lafayette, Indiana													
N.C. Reg. Pity., Ind.-----	Calif.	RIRxWL	BX	R. Red x R. Cornell 4	4	3	4	3	4	4	4		
Parks Poultry Farm, Altoona, Pennsylvania													
Parks, Pa.-----	Minn.	WL	SX	Keystone B-1-----	1	1	1	3	1	1	1	3	3
Parks, Pa.-----	Mo.-F.	WL	SX	Keystone B-1-----	3	4	3	2	2	2	2	3	3
Parks, Pa.-----	N.H.	WL	SX	Keystone B-1-----	2	2	4	4	2	2	2	4	3
Parks, Pa.-----	N.C.	WL	SX	Keystone B-1-----	1	2	3	4	2	2	1	4	2
Parks, Pa.-----	Pa.	WL	SX	Keystone B-1-----	1	1	4	3	2	2	1	4	2
Parks, Pa.-----	Tenn.	WL	SX	Keystone B-1-----	1	3	2	3	2	1	2	3	1
Parks Poultry Farm, Altoona, Pennsylvania													
Parks, Pa.-----	Mo.-F.	RIRxWPR	BX	Sil-Go-Links-----	4	3	4	3	1	1	4	2	4
Parks, Pa.-----	Pa.	RIRxWPR	BX	Sil-Go-Links-----	3	1	1	4	1	1	3	3	2
Randall Hatchery & Breeding Farm, Cherry Valley, California													
Randall, Calif.-----	Calif.	CGxWL	BX	Randall Gray x Leg. 3	3	1	2	4	3	3	3		
St. Augustin Coop. Hatchery, St. Augustin, Quebec													
Couvoir, St. Augustin, Que.-----	C.C.	WL	SX	Corvette A-1-----	2	2	1	2	3	3	2	3	1

Table 5. --Range group ranking for stock entered in 1968-69 random sample egg production tests--Continued

ENTRY IDENTIFICATION		TEST	BREEDING	STRAIN OR TRADE NAME	INCOME OVER FEED COST AND CHICK (\$)	EGG PRO- DUCTION (Hen housed)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE AND EXTRA LARGE EGGS (%)	FEED PER POUND OF EGGS (lbs)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
Shaver Poultry Breeding Farm, Galt, Ontario														
Shaver, Ont. (Niles, Calif.)	Calif.	WL	SX	Starcross 288	1	3	1	1	1	1	1	1		
Shaver, Ont.	C.C.	WL	SX	Starcross 288	1	3	2	2	2	1	1	2	2	2
Shaver, Ont. (Delta, Fla.)	Fla.	WL	SX	Starcross 288	1	2	1	3	3	2	1	2	3	1
Shaver, Ont. (Silver Lake, Minn.)	Minn.	WL	SX	Starcross 288	1	1	2	2	2	2	2	1	3	1
Shaver, Ont.	Mo.-C.	WL	SX	Starcross 288	3	2	2	4	2	2	2	2	4	1
Shaver, Ont. (Commercial, Ind.)	Mo.-F.	WL	SX	Starcross 288	1	2	3	2	2	2	2	1	2	2
Shaver, Ont.	N.J.	WL	SX	Starcross 288	1	2	2	2	2	1	1	2	3	2
Shaver, Ont. (Mid-Valley, Va.)	N.C.	WL	SX	Starcross 288	2	1	2	3	3	2	2	2	4	2
Shaver, Ont.	Pa.	WL	SX	Starcross 288	1	2	4	4	3	3	3	1	2	1
Shaver, Ont.	Tenn.	WL	SX	Starcross 288	1	2	1	3	1	1	1	1	2	1
Shaver, Ont.	Texas	WL	SX	Starcross 288	2	3	1	3	3	1		2	3	2
Starline Breeders Hatchery, Saskatoon, Saskatchewan														
Starline, Sask.	C.C.	CGxWL	BX	Pearlette	4	3	2	2	3	2	2	4	4	3
Stone's Poultry Farm, Dinuba, California														
Stone's, Calif.	Calif.	WL	SX	Stone H 56	3	3	3	4	4	3	2	3		
Stone's, Calif. (Hoovers, Iowa)	Minn.	WL	SX	Stone H 56	3	2	3	4	4	2	2	3	3	1
Stone's, Calif.	N.C.	WL	SX	Stone H 56	2	3	2	2	1	3	2	3	2	1
Sturtevant Farms, Inc., Halifax, Massachusetts														
Sturtevant, Mass.	N.H.	RIRxBPR	BX	Black Sex Link	4	4	4	2	2	2	2	4	3	3
Sturtevant, Mass.	N.C.	RIRxBPR	BX	Black Sex Link	4	4	4	1	3	1	1	4	2	4
Tatum Farms, Dawsonville, Georgia														
Tatum, Ga.	Fla.	WL	SX	Tatum T-100	3	3	1	3	3	3	3	3	2	4
Tatum, Ga.	N.J.	WL	SX	Tatum T-100	4	3	4	3	3	3	3	3	2	1
Tatum, Ga.	N.H.	WL	SX	Tatum T-100	3	3	3	2	3	3	3	3	2	4
Tatum, Ga.	Pa.	WL	SX	Tatum T-100	3	3	1	3	3	4	4	1	2	3
Tatum, Ga.	Tenn.	WL	SX	Tatum T-100	3	3	3	2	3	3	3	2	2	3
Tatum, Ga.	Texas	WL	SX	Tatum T-100	4	4	2	1	4	4		4	2	4
Thornber's Pky. Br. Res. Dept., Retford, Nottinghamshire, England														
Thornber, Eng.	C.C.	WL	SX	Thornber 808	1	2	2	2	2	4	4	1	4	1

Table5. --Range group ranking for stock entered in 1968-69 random sample egg production tests--Continued

ENTRY IDENTIFICATION	TEST	BREEDING	STRAIN OR TRADE NAME	INCOME OVER FEED AND CHICK COST (\$)	EGG PRO- DUCTION (Hen housed)	AGE AT 50% PRO- DUCTION (Days)	GROWING MORTALITY (%)	LAYING MORTALITY (%)	EGG WEIGHT (oz)	LARGE AND EXTRA LARGE EGGS (%)	FEED PER POUND OF EGGS (lbs)	ALBUMEN QUALITY (H.U.)	BLOOD SPOTS (%)
Tokai Poultry Farm, Ltd., Retreat, Cape Province, So. Africa													
Tokai, Cape Province (Eikenhof, Elgin) ---	Calif.	AW	BX	Tokai 67 ----- 3	2	1	1	3	4	4	3		
Warren, J.J., Inc., North Brookfield, Massachusetts													
Warren, Mass. -----	N.H.	RIRxRIW	BX	Sex-Sal-Link-F----- 1	2	4	1	1	2	2	3	4	3
Warren, Mass. -----	Pa.	RIRxRIW	BX	Sex-Sal-Link-F----- 3	3	4	1	1	2	2	3	2	3
Welp's Breeding Farm, Bancroft, Iowa													
Welp, Iowa (Childers, Calif.) -----	Calif.	WL	SX	Welpine 937 ----- 2	2	2	1	3	3	3	1		
Welp, Iowa (Tampa, Fla.) -----	Fla.	WL	SX	Welpine 937 -----	3	1	3	4	3	3	3	3	3
Welp, Iowa -----	Minn.	WL	SX	Welpine 937 ----- 1	1	1	1	1	4	4	1	3	1
Welp, Iowa -----	Mo.-F.	WL	SX	Welpine 937 ----- 2	2	1	1	2	4	4	1	2	1
Welp, Iowa -----	N.C.	WL	SX	Welpine 937 ----- 1	1	1	1	2	3	3	2	3	2
Welp, Iowa -----	Tenn.	WL	SX	Welpine 937 ----- 1	1	2	1	2	3	3	2	2	1
Welp, Iowa -----	Texas	WL	SX	Welpine 937 -----	2	2	1	1	4		3	2	2

RANDOM SAMPLE EGG PRODUCTION TEST ENTRIES AND CONDITIONS, 1968-69

Table 6. --Stock entered in 1968-69 tests

Breeder	Stock		Number of entries	Tests entered											
	Code	Strain or trade name		Calif.	C.C.	Fla.	Minn.	Mo.C.	Mo.F.	N.H.	N.J.	N.C.	Pa.	Tenn.	Texas
Animal Res. Inst.	570	Kentville R. B.C.	1		X										
Anthony	10	Anthony Leghorn	6				X	X	X		X		X	X	
Babcock	307	Babcock B-300	11	X	X	X	X	X	X		X		X	X	X
Babcock	405	Babcock B-305	4						X	X			X	X	X
Babcock	377	Babcock B-390	2							X			X		
Brender	230	Brender Moneymaker	1				X								
Burling	361	Golden Tri-Cross	1											X	
Cameron	283	Cameron 924	1											X	
Carey	372	Carey New Nick	2						X					X	
Carey	397	Carey New Spots	1											X	
Cashman	304	Cashman Astronauts	2					X	X						
Cashman	31	Cashman Hi-Cash	8	X	X	X	X	X	X		X	X		X	
Colonial	289	Trueline 365 B	5			X	X	X	X		X				
Colonial	392	Trueline 365 H	1		X										
Davis	309	Davis Combiner	2						X		X				
Davis	399	Davis Red	6	X		X	X	X	X		X			X	
Demler	371	Demler D-65	1	X											
deZeeuw	514	deZeeuw 752	1		X										
Erath	350	Erath Mestiza	2					X							X
Fisher	604	Fisher 105	1		X										
Garber	66	Garber G 200	7	X		X	X		X		X		X		X
Garber	65	Garber GX291	5	X				X			X		X	X	
Garrison	255	Garrison Leghorn	1								X				
Garrison	69	Golden Sex Link	1										X		
Ghostley	72	Ghostley Pearl	4				X				X		X	X	X
Harco	225	Harco Sex Link	4						X		X		X	X	
Hardy	86	Deluxe Sex Link	1										X		
Heisdorf & Nelson	88	H & N Nick Chick	1	X											
Honegger	92	Honegger Layer	1			X									

Table 6. --Stock entered in 1968-69 tests--Continued

Breeder	Stock		Number of entries	Tests entered											
	Code	Strain or trade name		Calif.	C.C.	Fla.	Minn.	Mo.C.	Mo.F.	N.H.	N.J.	N.C.	Pa.	Tenn.	Texas
Hubbard	378	Hubbard Golden Comet	4		X					X		X			
Hy-Line	96	Hy-Line 934	3	X			X		X						
Hy-Line	385	Hy-Line 934 E	5		X	X					X			X	
Hy-Line	408	Hy-Line 934 J	1			X									
Hy-Line	388	Hy-Line 938	6	X			X		X				X	XX	
Ideal	356	Ideal 236	6	X				X	X		X		X	X	
Ind. Farm Bur.	152	Princess 55	3				X		X		X				
Ind. Farm Bur.	234	Duchess 60	3					X				X			
Jacobson	404	Basketfillers	2				X		X						
Kimber	110	Kimber K-137	7	X	X	X				X	X	X	X		
Kimber	111	Kimber K-141	9	X			X			X	X	X	X	X	
Kimber	112	Kimber K-155	2	X					X						
Lawton	117	Buff Sex Link	4					X	X	X			X		
No. Cen. Reg. Lab.	37	Reg. Cornell Control	6	X		X		X		X		X			
No. Cen. Reg. Lab.	157	R. Red x R. Cornell	1	X											
Parks	352	Parks Keystone B-1	6				X		X		X	X	X		
Parks	382	Parks Sil-Go-Link	2						X			X			
Randall	159	Randall Gray Leghorn	1	X											
St. Augustine	566	Corvette A-1	1		X										
Shaver	181	Shaver Starcross 288	11	X	X	X	X	X	X	X	X	X	X	X	
Starline	533	Starline Pearllette	1		X										
Stone	190	Stone H-56	3	X			X				X				
Sturtevant	336	Black Sex Link	2							X		X			
Tatum	401	Tatum T-100	6					X			X	X	X	X	
Thornber	407	Thornber 808	1		X										
Tokai	406	Tokai 67	1	X											
Warren	305	Sex Sal Link F	2							X		X	X		
Welp	290	Welpine 937	7	X		X	X	X	X					X	

Table 7. -- Management, rations, laying house environment, and vaccination provided by tests, 1968-69

Test	Hatched	Age at housing (days)	Length of test (days)	Entries (number)	Replications		Housing management			Sq. feet per bird
					Num-ber	Birds per rep.	Brooding	Rearing	Laying ^{1/}	
California-----	6/2/67	126	544	19	4	50	Litter	Litter	Litter	2.3
Cent. Canada----	4/9/68	147	497	12	2	70	Litter	Litter	Litter	2.7
					4	50	Litter	Litter	Cage-1	.9
Florida -----	10/6/67	150	550	12	4	50	Litter	Litter	Litter	2.9
					4	50	Litter	Litter	Cage-2	.6
Minnesota Cage--	4/29/68	150	497	16	3	68	Litter	Litter	Cage-3	.5
Minnesota Floor -	4/26/68	150	500	16	1	100	Litter	Litter	Litter	2.0
Missouri Cage---	9/30/67	150	500	15	2	40	Litter	Litter	Cage-8	.58
					2	40	Litter	Litter	Cage-10	.47
					2	48	Litter	Litter	Cage-12	.39
Missouri Floor --	3/2/68	150	500	24	1	40	Litter	Litter	Litter	2.3
					1	50	Litter	Litter	Litter	1.9
					1	60	Litter	Litter	Litter	1.6
					1	70	Litter	Litter	Litter	1.3
New Hampshire--	5/8/68	160	500	17	1	70	Litter	Litter	Litter	2.0
					1	112	Litter	Litter	Cage-2	.7
					1	360	Litter	Litter	Cage-6	.5
New Jersey -----	3/27/68	150	500	12	1	25	Litter	Litter	Litter	4.0
					1	25	Litter	Litter	Cage-25	1.0
North Carolina --	3/29/68	150	500	20	2	50	Slats	Slats	Slats	1.0
					2	50	Litter-slat	Litter-slat	Litter-slat	1.5
					4	26	Litter&slat	Litter&slat	Cage-2	.6
Pennsylvania ----	4/22/68	150	500	24	2	50	Litter	Litter	Litter	1.7
Tennessee -----	4/4/68	147	487	14	4	15	Litter	Litter	Cage-1	.9
					4	30	Litter	Litter	Cage-2	.45
Texas -----	3/9/68	150	500	13	36 ^{2/}	6	Litter	Litter	Cage-2	.6

^{1/} The numerals after the word "cage" refer to the number of birds per cage.^{2/} 6 replicates of 6 birds each for each of 3 rations in each of 2 houses.

Table 7. -- Management, rations, laying house environment, and vaccination provided by tests, 1968-69--
Continued

Test	Entries brooded inter- mingled	Min. oz./doz. for large eggs	Protein (percent)			Metab. energy ^{3/} (calories/pound)			MC/Cr. Prot. ^{4/}		
			Start	Grow	Lay	Start	Grow	Lay	Start	Grow	Lay
California-----	No	23	22.6	17.8	16.9	1432	1382	1307	63.0	78.0	77.0
Cent. Canada-----	No	24	22.3	16.1	17.0	1300	1208	1300	59.4	79.0	81.0
Florida -----	Yes	23	22.0	17.4	16.9	1340	1371	1313	60.9	78.8	77.7
Minnesota Cage---	Yes	23	20.2	15.2	16.95	1268	1215	1234	63.0	80.0	73.0
Minnesota Floor --	Yes	23	20.2	15.2	16.95	1268	1215	1234	63.0	80.0	73.0
Missouri Cage----	Yes	23	20.7	16.2	17.1	1318	1261	1261	63.7	78.0	73.9
Missouri Floor ---	Yes	23	20.7	16.2	17.1	1318	1261	1281	63.7	78.0	75.3
New Hampshire---	Yes	23.5	20.9	16.0	18.5 to 15.5	1340	1319	1255 to 1337	64.0	82.0	72.0 to 81.0
New Jersey -----	Yes	24	21.2	-----	18.8	1227	-----	1144	57.9	-----	60.9
North Carolina---	No	23	20.0	16.0	18.3 to 16.5	1249	1238	1303 to 1335	62.4	77.4	71.2 to 80.9
Pennsylvania -----	Yes	24	21.0	17.0	18.0	<u>5/1300</u>	<u>5/1357</u>	<u>5/1354</u>	61.9	79.8	75.2
Tennessee -----	Yes	23	21.9	17.7	17.2	1346	1356	1280	61.5	76.6	74.4
	Yes	23	21.9	17.7	13.4	1346	1356	1315	61.5	76.6	98.1
Texas -----	Yes	24	21.5	17.5	17.5	<u>5/1264</u>	<u>5/1324</u>	<u>5/1354</u>	61.9	79.8	75.2

^{3/} Metabolizable energy is the maximum quantity of feed energy that possibly may be used by the chicken.
^{4/} Metabolizable calories divided by percent crude protein.
^{5/} Approximate metabolizable energy computed from productive energy, using 70 percent as the conversion factor.

Table 7. -- Management, rations, laying house environment, and vaccination provided by tests, 1968-69--
Continued

Test	Lighting		Artificial heat used	R Value of insulation material <u>6/</u>		Ventilation
	Rearing (hours)	Laying (hours)				
California-----	Natural	14	No	Ceiling Walls	1.9 1.7	Natural via windows
Cent. Canada----	(<u>7/</u>)	(<u>8/</u>)	Yes	Ceiling Walls	27.9 15.1	Exhaust fans and in east wall
Florida-----	Natural	14	No	Floor House Cage Summer House Winter	None 13.0 8.0	Natural via windows
Minnesota Cage--	12	12 to 16	No	Ceiling Walls	15.8 12.1	Positive pressure
Minnesota Floor -	Natural	12 to 16	No	Ceiling Walls	15.0 13.0	Exhaust fans
Missouri Cage---	10	14	No	Ceiling Walls	5.8 None	Ridge vents
Missouri Floor --	Natural	14	No	Ceiling Walls	15.0 15.0	Exhaust fans in ceiling
New Hampshire--	14	14	No	Ceiling Walls	15.0 15.0	Exhaust fans
New Jersey -----	Natural	14	Yes	Ceiling Walls	1.9 2.4	Exhaust fans
North Carolina---	Step down.	Step up to 17	No	Ceiling Walls	7.3 1.5	Natural via windows
Pennsylvania----	Natural	14	Yes	Ceiling Walls	15.5 15.5	Positive Pressure
Tennessee -----	Natural	Natural <u>9/</u>	No	Half of house at and half at 13.0.	4.0	Winter, positive pressure; summer, exhaust fans.
Texas -----	Natural	15	No	None	----	Natural via windows

6/ Due to variations in type of construction, R Values will be approximate for some tests.

7/ At day old--18-1/2 hr.; light decreased 15 minutes per wk. to meet at 15-1/2 hr. at longest day, then natural decrease until 13-1/2 hr.

8/ 13-1/2 hr. until natural increase takes light hours to 15-1/2 hr. in mid-June, then light held at 15-1/2 hr. until end of test.

9/ 14. hr. per day until 10 mo.; thereafter increase 15 minutes per week.

Table 7. -- Management, rations, laying house environment, and vaccination provided by tests, 1968-69--
Continued

Test	New Castle		Infectious bronchitis		Fowl Pox		Laryngo- trachitis		Encephalo- myelitis		Coccidiosis control	
	Type	Age (wk.)	Type	Age (wk.)	Type	Age (wk.)	Type	Age (wk.)	Type	Age (wk.)	Type	Age (wk.)
California	Water	1	Water	2.5	Wing	9	Vent	9	None	--	Live oocysts	1
	Muscle	4	Water	16	web.						Sulfa-	1
	Muscle	16	Water								quinoxaline.	
Cent. Canada	Spray	1.5	Spray	1.5	Wing	8	Vent	8	Spray	15	Amprol	0-8
	Spray	19	Spray	12	web.				Spray	21		
Florida	Water	1, 3, 10	Water	1, 3	Wing	8	None	--	None	--	Cocci-Vac	2
	Water	16, 32	Water	10, 16	web.							
	Water	48, 64										
Minnesota Cage	Water	5	Water	5	Wing	9	None	--	None	--	Amprol +	0-20
	Water	14	Water	14	web.							
Minnesota Floor	Water	5	Water	5	Wing	9	None	--	None	--	Amprol +	0-20
	Water	14	Water	14	web.							
Missouri Cage	Water	1	Water	1	Wing	8	Occular	8	None	--	Cocci-Vac	1
	Water	6	Water	6	web.							
	Water	14	Water	14								
Missouri Floor	Water	1	Water	1	Wing	8	Occular	8	None	--	Cocci-Vac	1
	Water	6	Water	6	web.							
	Water	14	Water	14								
New Hamp- shire	Dust	2	Dust	2	None	--	None	--	None	--	Cocci-Vac	1
	Dust	20	Dust	20								
New Jersey	Water	4	Water	14	Feather	14	Occular	4	None	--	Amprol	8
	Water	16			follicle		Occular	14				
North Carolina	Water	1	Water	1	Wing	14	None	--	Water	20	None (slats)	--
	Water	5	Water	5	web.						Cocci-Vac	1
	Water	17	Water	17							Trithiodol	1-9
Pennsyl- vania	Water	4	Water	4	None	--	None	--	None	--	None	--
	Water	8	Water	8								
	Water	16	Water	16								
Tennessee	Occular	1 day	Occular	1 day	Wing	10	None	--	None	--	Amprol	0-20
	Occular	10	Occular	10	web.							
	Occular	20	Occular	20								
Texas	Mod. live	.5	Mod. live	4 day	Wing	8	None	--	None	--	Sulfa-	0-13
	Mod. live	4	Virulent	13	web.						quinoxaline	
	Mod. live	21										

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Agricultural Research Service
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